Spring 5-4-2017

Infrastructural Urbanism: Hybridizing Our Networks

Hannah Boyd
Kennesaw State University

INFRASTRUCTURAL URBANISM:
Hybridizing Our Networks

This final project is presented to

The Faculty of the School of Architecture

by

Hannah Boyd

In partial fulfillment of the requirements for the Degree of

Bachelor of Architecture

Kennesaw State University, Marietta, Georgia

Spring Semester 2017

THESIS COLLABORATIVE 2016-2017

Request for Approval of Project Book

Kennesaw State University
Department of Architecture
College of Architecture and Construction Management

Student's Full Name: **Hannah Taylor Boyd**

Thesis Project Title: **Infrastructural Urbanism: Hybridizing Networks**

Thesis Summary: This thesis accepts future hybridized transportation infrastructures as a determinant framework for architectural strategies. The work herein explores architecture operating as an infrastructural field to enhance connectivity in the urban fabric and resiliency in networks over time.

Student Signature ______________________________ Date __________

Approved By:

Internal Advisor 1 ______________________________ Date __________
Professor Edwin E. Akins, II, AIA, LEED AP

Internal Advisor 2 ______________________________ Date __________
Professor Timothy Frank

Thesis Coordinator ______________________________ Date __________
Professor Elizabeth Martin

Department Chair ______________________________ Date __________
Dr. Tony Rizzuto

The author would like to acknowledge

Ed Akins for going above and beyond as a thesis advisor in his limitless guidance and support throughout this thesis project;

Tyler Kimbley for, not only marrying the author midway through the completion of this thesis, but also for supporting the author even when this thesis became a third party in the marriage and studio became a date night destination;

The author's parents for all-around support and being personal cheerleaders throughout the author's college career. Inspiration was never unattainable with them on the author's side.

CONTENTS

1.0

INFRASTRUCTURE + URBANITY

Figure 1.1

1.1 HYPOTHESIS

"The story of people can be told through our infrastructure. In the rise and fall of cities throughout history, the places best positioned for a thriving future have always been those that offer systems to create the lives that we want. And we can see that as the innovations of canals, aqueducts, railroads, and highways did in their time, the kind of infrastructure that we build today matters to our success. If we do it right, it will forever transform our way of life."
– Ryan Gravel[1]

Urban edges are created through interstices, spaces intervening between one thing and another, and are the resultant discontinuities in the urban fabric[2]. Hybridization of single-use infrastructures can bring systematic resiliency to networks over time. This thesis critiques single-use transportation infrastructures, such as roads, interstates, light and heavy rail, and their relationship to the pedestrian right-of-way. The complexities affecting the infrastructures' future adaptations to contemporary society require an investigation in architectural response and strategies for reuse and multi-use.

Cities evolve with and within their infrastructural frameworks, and when we seek hybridization of our single-use infrastructures, there is the potential to bring systematic resiliency to networks over time. The evolution of this framework influences as much as it is influenced by the built environment. At the demand of time and technology, the evolution of networks greatly impacts the life and form of a city.

Landscape urbanist Chris Reed states that, "Very broadly, twentieth-century infrastructural projects around the world were largely single-minded initiatives with specialized agendas[9]." It is the twenty-first century now, and this needs to change; multi-use sought within infrastructural development can accommodate changes in transportation technology, unused infrastructure in urban settings, and establish a relationship with the built environment to provide connectivity at the pedestrian level in locations that currently cater only to automobiles.

These problems are very familiar to us here in Atlanta, where, programmatically, the automobile dominates the rights-of-way, from our interstates to our surface streets. This problem affects us every day; the persistence of infrastructure that prioritizes the automobile limits our ability to efficiently and safely navigate our dense urban environments by foot, bicycle, or even, ironically, by automobile.

Figure 1.2
1950 Mass-Produced Housing

1.2 THE PROBLEM

A Sprawling System

After World War II when Americans left behind the tragedy of war, many also left behind the dirty and crowded cities. The suburbs lured away city-dwellers with growing families for a better quality of life. A booming economy supported policy and technology, which provided mass production of housing and automobiles. Then considered the 'future" way of life, sprawl redefined the edges of cities and towns and created a way of life that Americans know very well today[1].

"Sprawl has not only changed the way we build new places, however; it has changed how we perceive the built environment. Our growing reliance on cars also destroyed the transit systems that had evolved to create and support older cities, subrurbs, and towns. It facilitated population loss in virtually every central city across the country[1]." The suburbs generated extensive, new highway construction, which bypassed communities that were unable to adapt to the economic changes caused by the prevalence of the automobile. At this time of rampant development spurred by very attainable government subsidized home loans, Americans designed for the auto-oriented community and were soon exclusively dependent upon the automobile for everyday needs. The country's quick transition left the abandonment of outdated infrastructure and began a new chapter of city building: a movement that involved the development of single-use transportation networks for single-use suburban architecture[1].

Forecast for Change

A call for change is not only limited to the adaptability of existing networks, it is also needed for the evolution in transportation itself. According to statistics from BP, transportation as we know it will be history by or before 2030, claiming that, "The world's population will grow by 20% to approximately 8.2 billion souls, car ownership will rise three times as fast -- up 60% over the next 20 years, and even with gains in fuel efficiency, global energy demand will rise 40%." Given the exponential cost to improve these technologies, the disruption of transportation and energy is inevitable[3].

Based on these claims, in twenty to thirty years, we will wonder how we lived with the consequences of the incumbent energy industry as it is today. There will be an abrupt technology-based disruption due to the changes being made to contemporary society. In addition to the limitation of natural resources, the densification of cities will also reduce the need for automobiles in the future.

Persistent sprawl is only contributing to the problem; prior investment in this way of life is degrading the environment and straining our natural resources. With lack in natural resources and rise in population comes the need for re-densification of urban cores.

Figure 1.3
Atlanta 1901

Figure 1.4
Atlanta 1919

Figure 1.5
Atlanta 1960

Figure 1.6
Atlanta 2016

Due to technological and environmental change, we are beginning to see a shift in the role of infrastructure in the city on a global scale. Infrastructural renovations such as the Cheonggycheon Restoration project in Seoul, Harbor Drive in Portland, and Madrid Rio in Madrid have began adapting their underutilized infrastructural investments into multi-modal connectors in their urban settings. Alterations to auto-centric networks such as these have presented architectural challenges in response to these programmatic changes[4].

Atlanta as Case Study

Atlanta has always been famous, in several connotations, for its transportation networks. The city was formed as Terminus in 1836, when Georgia 'terminated' the U.S. Midwest Railroad line. Shortly following that, between 1845 and 1854, four more rail lines extended from Terminus, and the location was quickly deemed the rail hub of the Southeastern United States[10]. Settlement quickly grew from the hub, and has since programmatically evolved into the transportation network that we know today. The young city, perhaps, evolved too quickly from its efficient roots. Since 2008, the city has been ranked with worst traffic and longest commute times in the country[11].

The original Terminus railroad network still exists today, but as Interstate 75/85 Connector that shapes the urban fabric of Atlanta, catering only to the automobile. The city's infrastructural history had a major shift in 1950 when the original fleet of Atlanta streetcars ran for the last time and Interstate 85 emerged, paving the way for the downtown corridor as we know it today. Ten years later, Interstate 75 joined the network and the Connector took form. With the addition of the perimeter Interstate 285 in 1969 and the East-West Interstate 20 through the heart of the city in 1977, Atlanta then truly functioned as an auto-centric city[10].

The Terminus railroad intersection became the framework for the city of Atlanta and has since influenced the city's development. Since the founding of the city, existing transportation networks have deeply affected the built environment and urban operation. Piece by piece, the city's network of rail lines and streets has been added to and subtracted from, resulting in a very fragmented, tangled infrastructural network. The transportation timeline of Atlanta illustrates the evolution of road network systems and devolution of multi-modal streets. A systematic dismantling of the network occurred to prioritize singular modes of movement and single-use methods. These discontinuities in the urban fabric cause the problem of navigational limitations in the city; they bound people, communities, and districts and result in the famous traffic inefficiencies that plague the Atlanta metro area.

Sprawling City

As you can see in Figures 1.3 through 1.6, the network form of Atlanta has not changed since Terminus; however, the city limits of Atlanta has. Sprawl has been a major factor in the evolution of Atlanta. Edge cities have started to leave the city of Atlanta and self-incorporate as their own cities. Areas leaving the geographic definition of Atlanta out-pace the annexation of land by the city of Atlanta, relating urban evolution and densification to fields along larger transportation lines. Such sprawl has created nodes and centers that are seeking densification and demonstrate contraction of land mass. Here, we are seeing the direct relationship between sprawl and lack of densification in urban core.

After war during the early to mid-twentieth century, technology and financial policy allowed the mass production of housing and automobiles for soldiers' growing families. This created an entire new way of life, as easy access to individual transportation was not confining families to one area in Atlanta.

> "The growing reliance on cars directly contributed to population loss in the city and the disuse of outdated infrastructure that it was built upon[1]."

During this time of sprawl and rise in single-family homes, Atlanta began to see these edge cities thrive. Sandy Springs, Buckhead, Chamblee, Decatur, and Druid Hills experienced large increases of population. "The future of this country is tied directly to the destiny of sprawl;" occupation of land and traffic inefficiency are closely related, as urban population versus sprawl population shows us[1]. The future of Atlanta depends on its relationship to edge cities, and currently, its major relationship consists of a dialogue of traffic inefficiencies between them.

Atlanta is ready for change. We are beginning to see initiative in addressing the city's major issues in transportation with connectivity solutions. Current proposals include Park 400 in Buckhead that bridges points of interest for pedestrian travel and The Stitch that re-stitches boundaries in Downtown created by Interstate 75/85[14]. The city is also beginning to embrace infrastructural shifts, as Mayor Kasim Reed welcomes the "Smart City" program that involves development of infrastructural technologies supporting autonomous vehicles in Midtown[15].

Figure 1.7
Evolution of Atlanta City Limits

TIMELINE
ATLANTA TRANSPORTATION

1836
Terminus began when Georgia decided to build railroad to the U.S. Midwest.

1854
Atlanta deemed transportation hub of the Southeast with rail lines established in four different directions.

1871
First streetcars run on Atlanta Street Railway Company.

1910
Beltline Railroad bypass were constructed around Atlanta.

1950
Atlanta runs final streetcar.
Multi-lane Interstate 85 constructed through Atlanta.

1960
Beltline Railroads largely abandoned.
Multi-lane Interstate 75 constructed through Atlanta.

1969
Multi-lane Interstate 285 constructed along periphery of Atlanta.

Atlanta Population

1840	1860	1880	1910	1940	1950	1960	1970
2,500	9,554	37,409	154,839	302,288	331,314	487,455	496,973

1.2.1 ADDRESSING THE PROBLEM

This thesis investigates architectural methods that challenge transportation infrastructures in mutli-modal hybridization and adaptability for resilient use. First, studies in several theorists' and architects' propositions influence the area of work in this thesis's approach for solution. The extent of work is determined both by choice of site as well as, most influentially, architect Stan Allen's definitions of Infrastructural Urbanism.

Second, based on the research, criteria is established in the choosing of specific site location in urban Atlanta. The city's insistent sprawling development and abundance of interstitial boundaries within the urban fabric makes it an ideal testing ground for an architectural interchange.

2008-Present
Metro Atlanta ranked worst traffic in the country.

1975
MARTA Rail System broke ground. Multi-lane Interstate 20 constructed across diameter of Atlanta.

2005
Atlanta Beltline Partnership formed to begin reuse of rail lines to multi-modal trail.

2014
New Atlanta Streetcar constructed downtown.

2030
BP claims insufficient fossil fuels to support transportation as we know it.

1980	2005	2015	2030
425,022	483,108	463,878	> 1 million

Figure 1.8

2.0

HYBRIDIZATION OF INFRASTRUCTURE

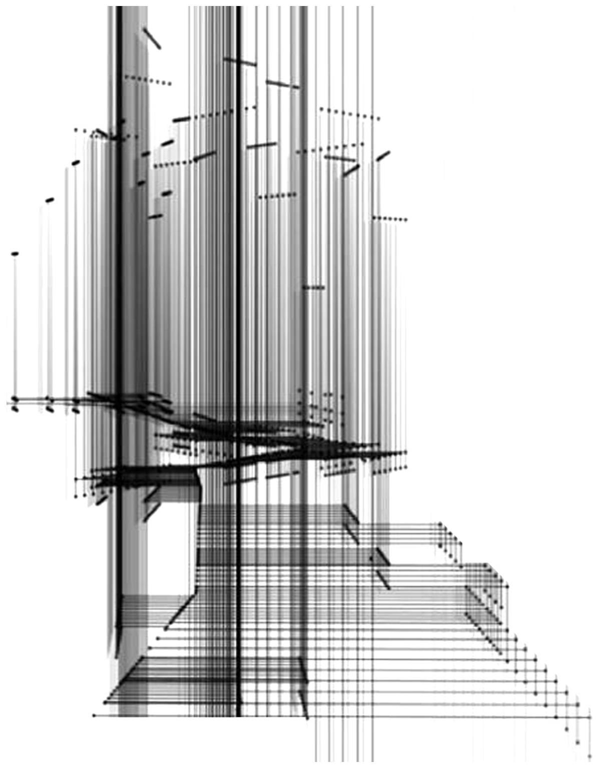


Figure 2.1
Layering diagram

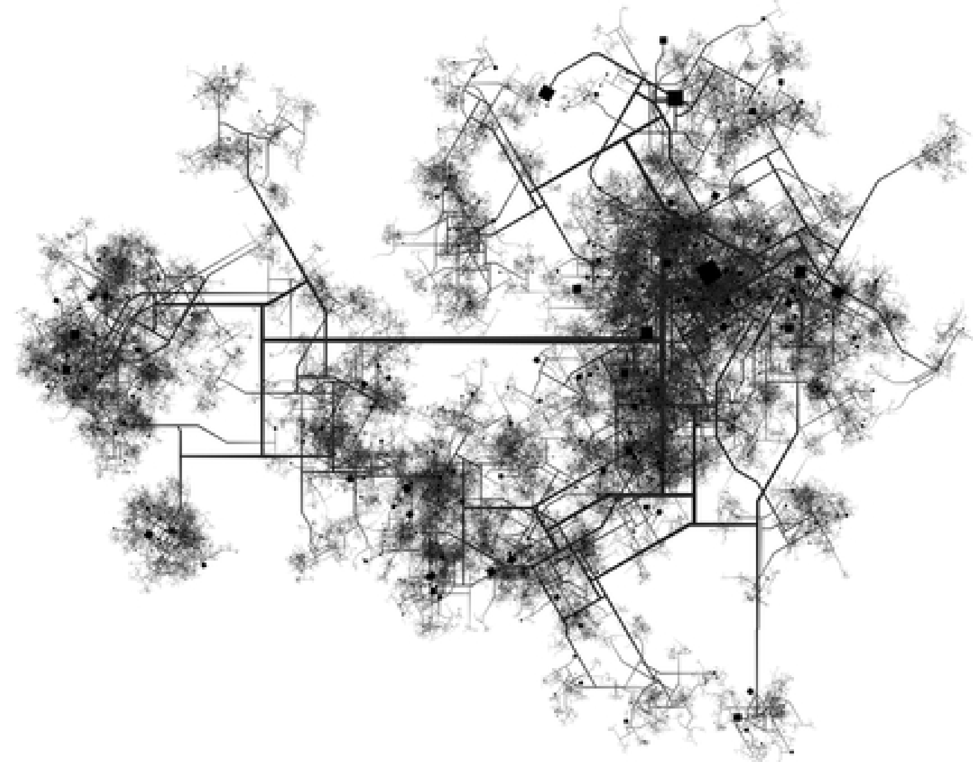


Figure 2.2
Connectivity diagram

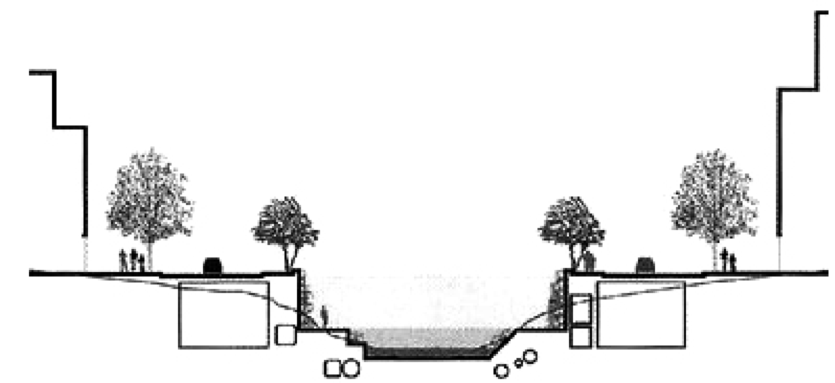


Figure 2.3
Architecture + Infrastructure

2.1 STRATEGIES FOR URBAN HYBRIDIZATION

Application of Theory and Case Study

The objective for this thesis is to conduct an architectural intervention on a site of potential multimodal interchange in Atlanta. This thesis explores potential adaptation of our infrastructures while prioritizing human inhabitation of a site once designed primarily for the machine. With urban analysis to generate site-based need for the future integrated with strategic adaptation to the human scale, this project will provide a practical solution to an interstitial problem of today and an imminent evolutionary problem in the future.

In this topic of study, an intersection in Atlanta that meets the criteria in Section 2.2 will operate as the test site for this project. The contextual urban fabric will be interrogated through the lens of the urban hybridization strategies discussed in Chapter 1 described as follows:

- Layering infrastructure
- Reclamation and connectivity
- Sympathetic architectural and infrastructural integration

Once a major intersection in the metro location where several types of infrastructures come together is identified, it will be evaluated with theorist Pheobe Crisman's methods of layering infrastructures through sectional planning. Assessment of the major boundaries that result from the site will also be examined under Crisman's urban edge theory. Efforts in reclaiming unused infrastructure present at the site to bring connectivity to the human scale will be made using the methods of Ryan Gravel. Furthermore, strategies of functional design will be applied to establish a better relationship between infrastructure and architecture using propositions of functionality as defined by architect Stan Allen.

Hybridization and reuse of infrastructure will bring resiliency in the evolution of infrastructural networks, and understanding these processes will inform the way in which infrastructures can be the framework in which the city operates. By connecting these interstitial boundaries and seeking multiple uses within my solution, I will provide an architectural strategy to urban infrastructure for lasting reuse.

Programmatic Approach

The result of this project should serve as a multimodal prototype that provides a resilient architectural strategy to urban infrastructure. The solution will be programmatically adaptable to interchanges across the country that suffer from problems due to spatial segregation and technological disruption. It is important that the built environment is designed to not only serve the needs of the now, but also the future. This project's program is driven by the complexities of the selected site and the hyrbidization strategies for a less car-centric Atlanta.

2.2 LAYERING INFRASTRUCTURE

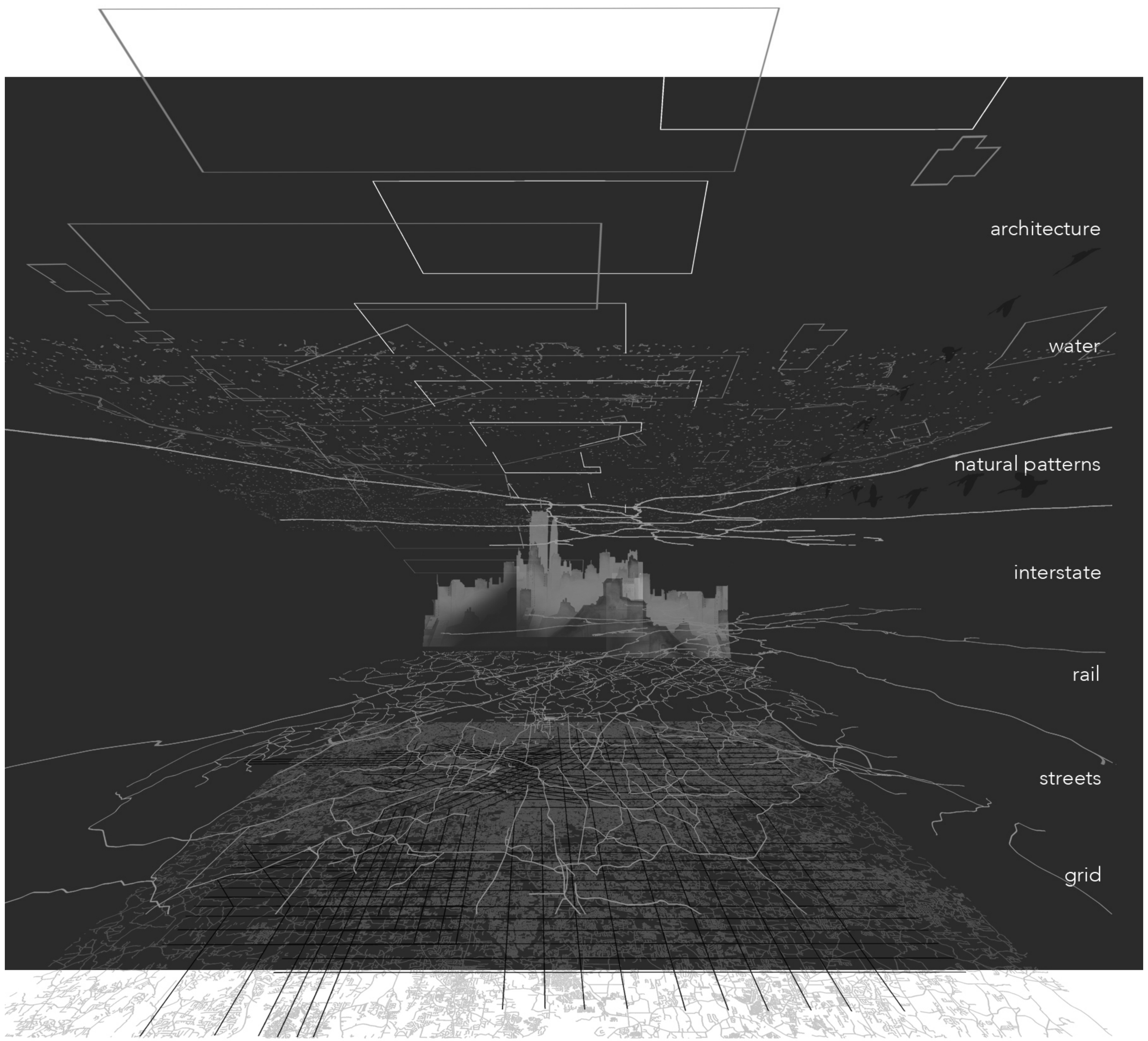


Figure 2.4

2.2.1 CONCEPT

"Melvin Webber, in his essay *The Urban Place and the Non-Place Urban Realm*, argues that modern forms of urbanity depend less on traditional places than the forms of mobility that are facilitated by modern technologies of virtual communication and physical transport." He continues, "If only we can redesign and reengineer our transport infrastructure to be more multiscaled, multifaceted, and [networked] to real-time analysis of our patterns of movement[7]."

Across the nation, the purpose of urban transit corridors and secondary networks connecting to them has always been to simply provide a dispersed population with access to the central business district. The primary modes of transit for such access, bus, commuter rail, light rail, and personal travel, ranging from foot to automobile, determine the urban experience and defines the way in which the city operates. Transit mobility is influential in guiding where future development takes place. Today, as we see the effects of urban sprawl, we must challenge and accept the extent to which urban development is influenced by the placement of transit lines[7].

Today, the number of modes of transit that are available to the urban traveler are numerous; however, the systematic practicality of these modes in regard to urban connectivity is not always ideal, especially in metro Atlanta. Transit is no longer designed with only urban commutes to the central business district in mind, as origins and destinations have dispersed evenly throughout metro areas[7].

The question is not can or should transit influence development, but is how we want to use transportation to influence urban behavior and how we establish a relationship to the built environment. As architects, we can encourage any kind of development around any mode of transportation we desire as a society. Since World War II, the answer has been a sole focus on single-occupant automobiles and low density, single-use infrastructure and development.

"These forms are clearly not sustainable, and it is no longer obvious if they are desirable[7]."

Hybridization and layering of these single-use developments means planning of infrastructure and architecture must happen concurrently. Movement and static infrastructure, transport and architecture, are essential in meeting the contemporary needs of society; layering transportation and architecture as infrastructure would be able to meet the needs of tomorrow.

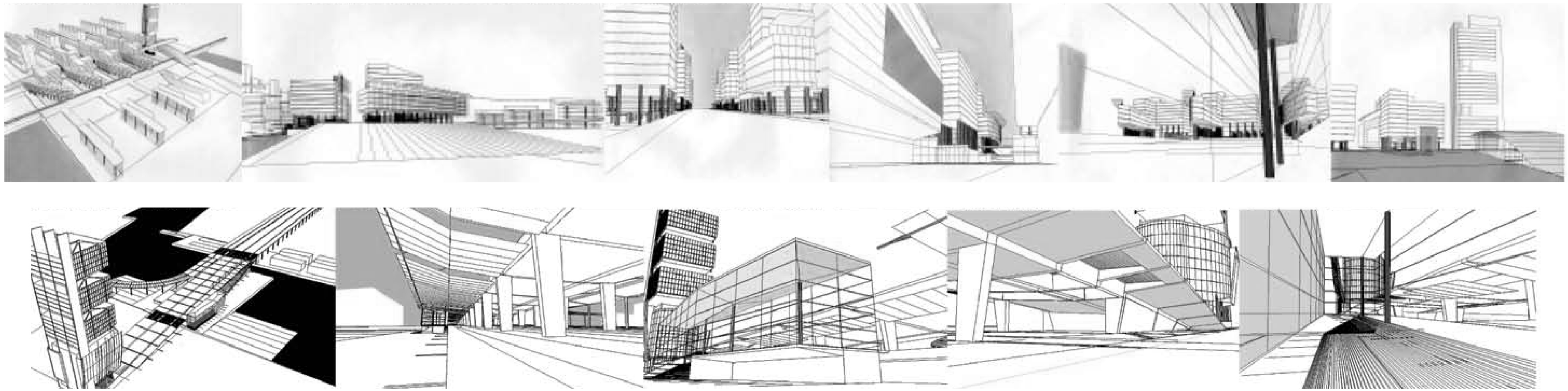


Figure 2.5
Crisman + Petrus Architects, Layering of Transport Infrastructure

2.2.2 THEORY

Pheobe Crisman, Harvard alumni and principal of Crisman + Petrus Architects, has authored several journal articles that explore how architectural constructs can utilize linear transportation spaces. She does not propose a new form of infrastructure, but the architectural response to infrastructure with interaction to evolving layered systems and the experimentation of inventive types and scales of design.

In Crisman's *Inhabiting the In-between: Architecture and Infrastructure Intertwined* she defines urban interstices as leftover spaces where urban and architectural scales and uses conflict, and often result in social and economic boundaries. These leftover spaces are the resultant of linear incisions by rail and highway, which challenge the morphological fabric of the city by creating urban edges and discontinuities[2].

20th Century roadway construction extensively suffers from these incisions due to accelerated changes in technology and mobility. It has created a condition of seemingly uninhabitable zones that limit connectivity, both physically and socially, due to a national mentality that prioritizes speed and vehicular safety over cultural issues of place, time, and human experience. Questioning the contemporary conception of the public realm requires an investigation in compelling, unexplored conditions of the air rights above and leftover spaces below and within roads, elevated highways, rail lines, and other single-use infrastructural elements. Crisman notes that "It seems that we are gradually coming to the point of directing all of these movements, horizontally as well as vertically, into special paths, making them visible and transparent, and of building the large and distinct framework of the city out of them[2]."

In Crisman's article *Interstices: the Architectural Appropriation of Transportation Infrastructure in the City Center,* she says, "The landscape of both active and underutilized limited access transport systems present opportunities to simultaneously invigorate negatively impacted adjacent spaces, increase physical engagement through urban density, reduce rural development pressures through urban infill, and support design exploration at the intersection of architecture, landscape, and urbanism[6]."

In these locations, there exists a strong, yet undeveloped, correlation between urban morphology and architecture typology. Interstitial spaces are opportunities for architectural sites to suture the infrastructural incisions in the urban fabric. Complex networks of "interwoven architecture and high-speed circulation" will influence the resilience of a city's built environment and provide the opportunity for better physical and social connectivity in dense urban environments[6].

Figure 2.6
1920, Retro-Futurism

Figure 2.7
1920, *Popular Science*

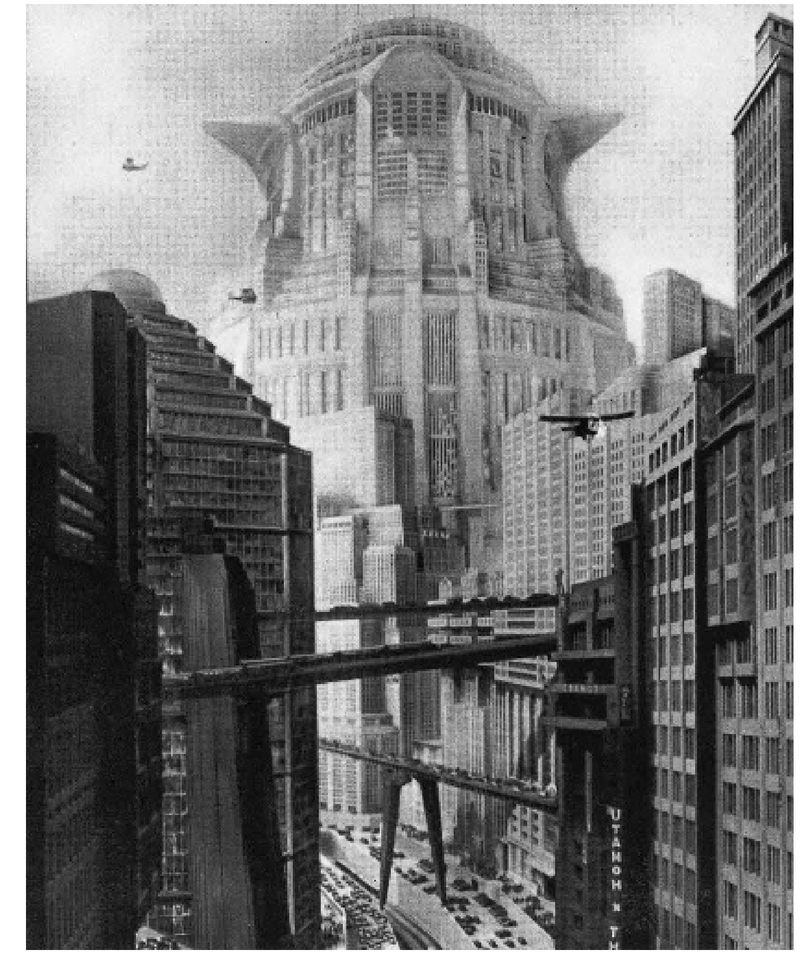


Figure 2.8
1922, Hugh Ferris

2.2.3 CASE STUDY

The Early 20th Century Metropolis

The City of the Future was an architectural experiment of Futurism and American Expressionism. A time of Renaissance in transportation technology spurred inventive means of urban planning; however, like many imaginative illustrations of the early 1900s, many did not get realized. Often envisioned in cross-section, the moderne metropolis was illustrated as a complex, layered network of transportation infrastructures that sought a solution to traffic congestion. Is it possible that illustrations from over a century ago present methods in the layering of architecture and infrastructure could still be applicable to our similar urban spatial problems today?

2.3 RECLAMATION

2.3.1 CONCEPT

When there is a shift in transportation technology, single-use infrastructure serving outdated modes get left behind. For example, the Roman aqueduct was cutting-edge technology for its time; however, those still standing today are just artifacts of antiquated operations. Unused infrastructure, seen most prevalently today as freight lines, are ensured a similar fate if not planned for. Given that existing networks provide efficient accessibility within cities, when pieces of such networks are no longer relevant to contemporary means of transport, they have the opportunity to adapt. It is when this occurs that we see resilience in infrastructure, and ultimately, the resilience in the functionality of an urban fabric.

Reclamation not only represents physical progress in urban environments; it can also present a sense of community. "Transportation infrastructure does more than move people. It builds communities, and it constructs our way of life... Social, cultural and physical barriers matter for a lot of reasons. They separate us from each other[1]."

"Resilience is increasingly being used as a way to describe human activities that are smart, secure, and sustainable. They are smart in that they are able to adapt to new technologies of the twenty-first century, secure in that they have built-in systems that enable them to respond to extreme events as well as being built to last and sustainable in that they are part of the solutions to the big questions[7]."

A global archetype of resilient cities is described as the sustainable transport city. The city type is relevant as urban professionals aim to design with a sense of purpose for new technology, city design, and community-based innovation. "Transport is the most fundamental infrastructure for a city because it creates the primary form of the city. Cities, neighborhoods, and regions are increasingly being designed to use energy sparingly by offering walkable, transit-oriented options[7]."

Cities with sustainable transport systems are able to reduce the use of fossil fuels, persistence of urban sprawl, and dependence on the automobile. The need for pedestrian and bicycle connectivity is just as important as automobile-based connections in city design. At this time of technological disruption, a sustainable approach to this type of connectivity is the reclamation of outdated transit infrastructure: existing networks seeking a new role in contemporary society.

This thesis is accepting of multi-modal transportation, taking into consideration the opportunity to reclaim unused infrastructure, thus proposing a contemporary approach to design of movement.

2.3.2 CASE STUDY

Ryan Gravel: Forward-Thinking Urban Planning
Ryan Gravel, an Atlanta native, is an urban planner, designer, and author that investigates the influence of society on and because of our infrastructure. In his work, he describes the intimate relationship between infrastructure and our way of life, and how strategic planning can illuminate a brighter path forward for cities.

He states, "People everywhere are responding to this new cycle of change by harnessing its energy to create new opportunities for their lives. As their efforts organize instinctively around physical infrastructure – the underlying construction of cities that also happens to form the foundation of our economy, culture, and social life – these active participants are doing more than making their lives more interesting. They are charting a brighter path forward for cities[1]."

Gravel published *Where We Want to Live: Reclaiming Infrastructure for a New Generation of Cities* in 2016, which argues for and justifies the reclamation of unused infrastructure to better connect communities to each other, or "infra-culture." He discusses that the public way adapts and changes over time, and like architect Stan Allen, he emphasizes that the simple lines that make up the very framework of a city defines its resiliency and operation. This framework "can make a city highly adaptable to change, or [it] can ensure that it is very resistant to change[1]."

Atlanta BeltLine
"Where Atlanta comes together"
A proposal originating from Gravel's master's thesis at Georgia Tech in 1999, the idea of the BeltLine was to link multiple city neighborhoods with a new transportation system along the old Atlanta "Belt Line" railway. Rem Koolhaas wrote of Atlanta in his *Toward the Contemporary City* in 1989, mentioning the city's traffic congestion and ecological consequences of the sprawling condition. Taking on Koolhaas's challenge to Atlanta of shifting the attitude of prioritizing the automobile for urban expansion, Gravel conceived his thesis[1].

Gravel's objectives in his thesis were to reinvigorate Atlanta's in-town communities and improve transit mobility, and so he studied the design of successful infrastructure systems, primarily the walkable grid of Paris, and applied its strategies to a reclamation project of the old rail lines that once contributed to shaping the city[1].

Gaining immediate attention from citizens of Atlanta, efforts were made that culminated into the formation of Atlanta BeltLine, Inc (ABI) in 2006, which gained federal funding later in 2007. The first installation of the trail began in 2008. The 22-mile greenway proposes the adaptation of abandoned rail that once functioned as useful inner-city distribution of cargo and goods into practical transit systems of today, consisting of light-rail transit, parks, and multi-use trails. The project proposes to "generate economic growth and protect quality-of-life of 45 historic neighborhoods throughout the central city[5]." Putting Atlanta on the path to 21st century economic growth and sustainability, the BeltLine offers the city a means of transport as well as a destination unto itself. It has sparked a combination of urban development along it, including rail, train, green space, housing, and art.

Offering much needed pedestrian-friendly connections into downtown and midtown, the BeltLine also provides links to the existing MARTA system and suburban communities' transit services; therefore, it is establishing long-term transportation initiatives in all of the Atlanta metro region and beyond. Since 2008, four trail segments, six new or renovated parks, and new affordable housing have been constructed as part of this initiative. Managed, planned, and designed by the ABI, installations of the BeltLine are to grow throughout the next twenty years[4]. It has already caused spikes in real estate development and local business by providing an improved quality of life around the line[1].

Figure 2.9
BeltLine Master Plan

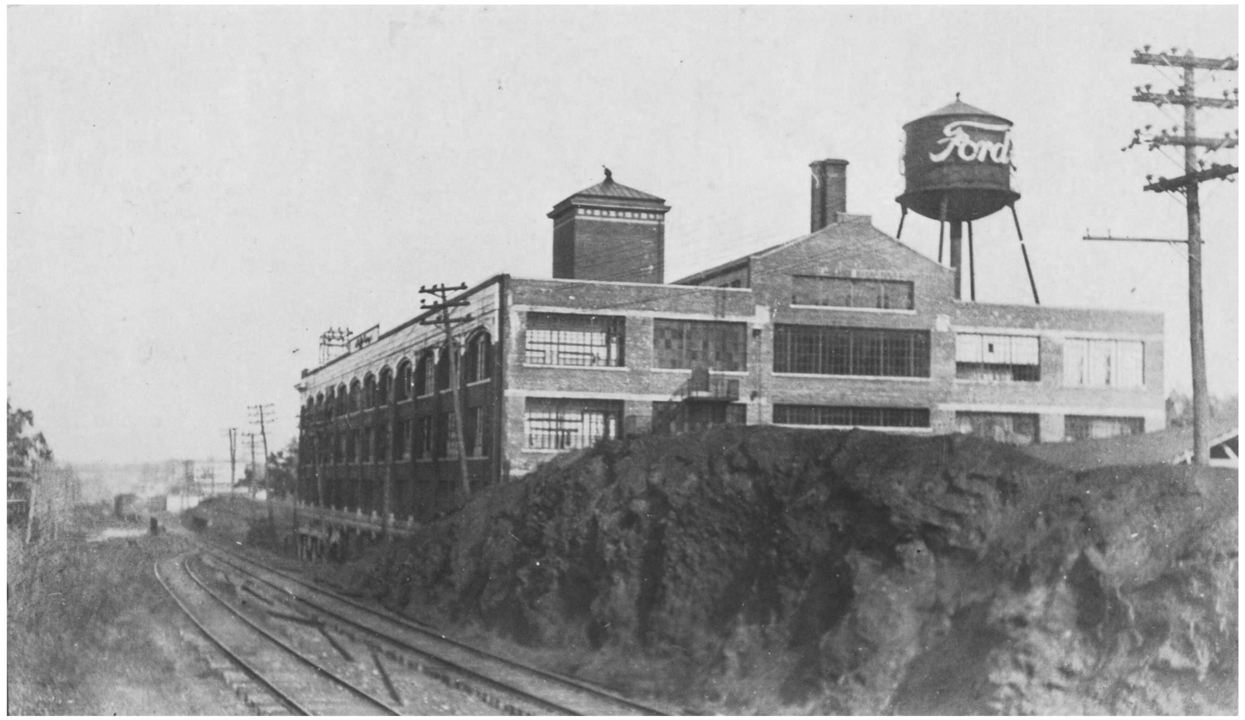


Figure 2.10


Figure 2.11

Evolution and Architectural Orientation

Gravel's BeltLine corridor not only exemplifies reclaiming of outdated infrastructure, it also illustrates an evolutionary link between infrastructure and architecture. The single-use rail line was originally the method of distributing goods to the city, and architecture responded with buildings facing these rails.

The centralized "front door" architectural response adapted when road networks became the primary means of transporting goods and people. The prioritization of truck transit and transport networks is evident in the architecture that we build with orientation of the front door. In this case study, architecture was oriented to the railroad when it was the source of goods, but when roadways took priority over railroads, the front door changed. As shown in Figure 2.12, now that the BeltLine has brought use back to the rail lines, adjacent buildings are responding to it again.

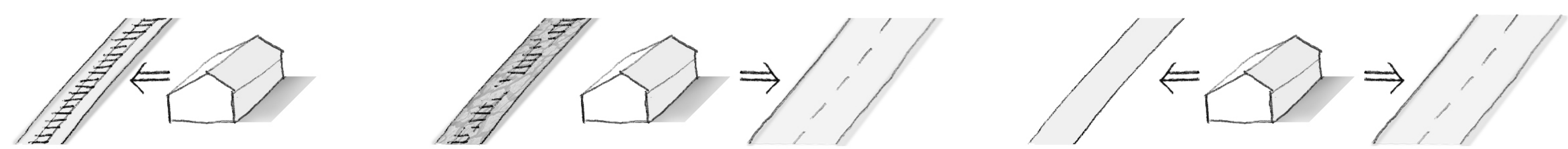


Figure 2.12

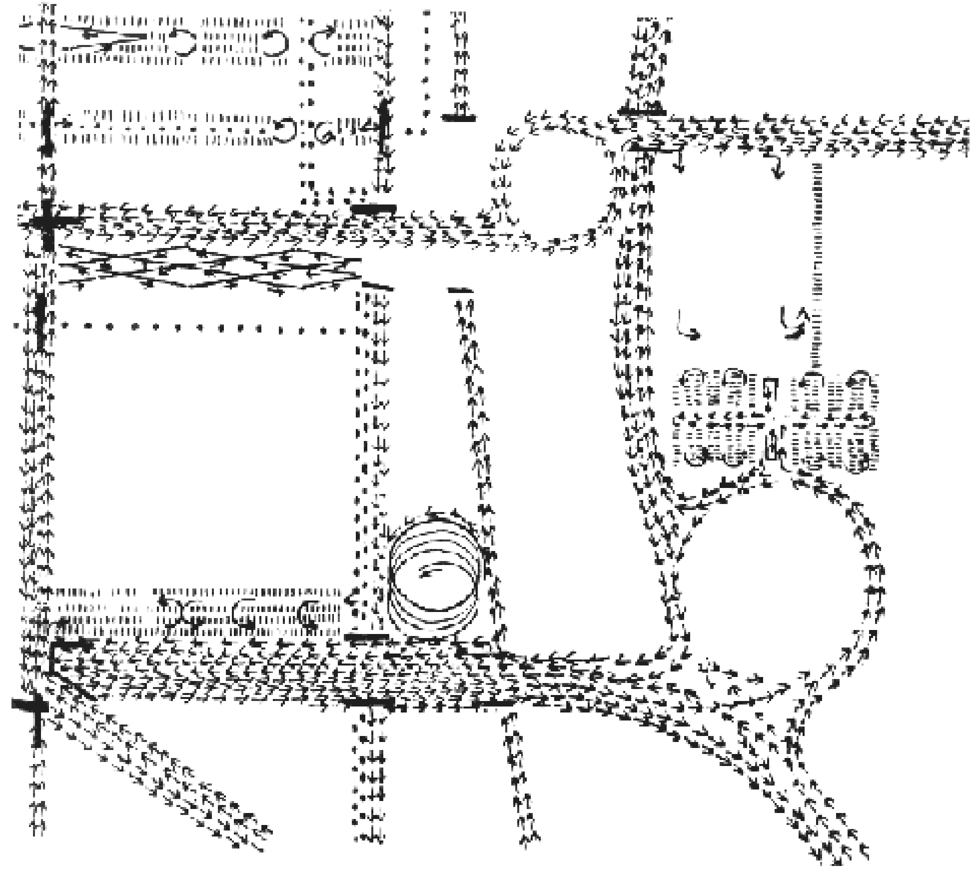


Figure 2.13
Louis Kahn, Movement Diagram

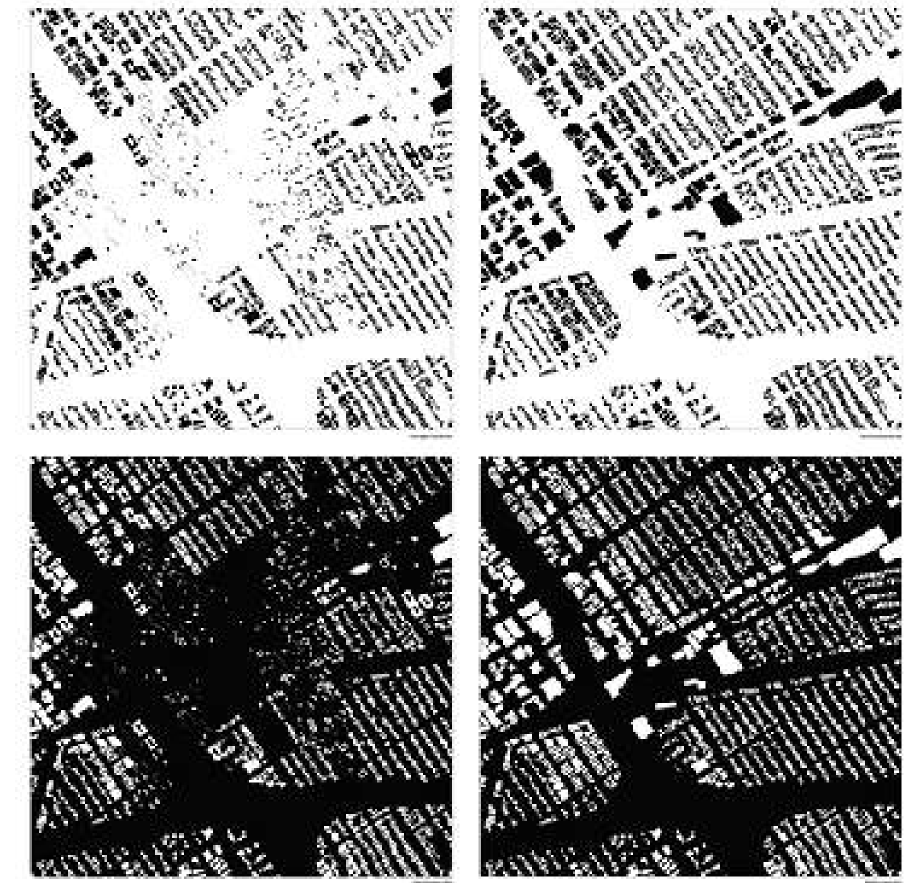


Figure 2.14
Peter Zellner, Differential Urbanism

2.4 ARCHITECTURE + INFRASTRUCTURE

2.4.1 CONCEPT

As seen in the previous case studies, the evolution of use within infrastructure relates to adjacent development and associated use in architecture. The relationship between infrastructure and architecture go hand-in-hand in the morphology of the built environment. This is hugely important in dense, urban environments, as the relationship directly affects the life of a city as we learned from Ryan Gravel. Hybridizing infrastructure and resiliency by reclaiming unused transit lines are methods in which we can seek adaptability in our existing networks. **Infrastructure and architecture must first be designed with a relationship based on instrumentality and function.**

The urban fabric is understood through the spatial relationship between urban and typological diagrams that define architecture and the city. While contemporary urban development heavily relies on the interrelationship of infrastructure and plot, infrastructural urbanism as a concept begins to transform the relationship between infrastructure and plot through the discourse between nodes and linking platforms. By applying these concepts through contextual analysis, this project aims to accommodate high density and growth over time[8]. The proposal for this project is driven by the linking of those notions to create a design solution acting as a catalyst for urban integrity and identity.

2.4.2 THEORY

Infrastructural Urbanism

Infrastructural Urbanism was published by architect Stan Allen, a New York architect and author of writings which define the point and lines of a city. This document theorizes the link between architecture and infrastructure and was a turning point in the architect's role in structuring the city. During the late 1960s and 1970s, architecture shifted to a more representational, semiotic approach that delineated the field to instrumentality and function. Allen's writings elaborate on that concept to emphasize that architecture cannot only be defined by representation of meaning, but the connection of said meaning and function by emphasizing the relationship of the human condition to architecture[8].

Infrastructural Urbanism is an analysis of "the site of architecture's contact with the complexity of the real." In this case, the engagement of production has the ability to produce directed fields in which program, event, and activity can take place. "Territory, communication, and speed are properly infrastructural problems, and architecture as a discipline has developed specific technical means to deal effectively with these variables." Material practices such as engineering deal with performance: the inputs and outputs of energy. While material practices work instrumentally, they can project transformations of reality through the use of energy and resources.

"In architecture and urbanism… architecture works with cultural and social variables as well as with physical materials." This gives architects the unique capability to transform and materialize concepts that can structure a city; the reality of social and cultural concepts applied to technical disciplines encompass the architect's influence in design. Allen quotes Team X's Alison Smithson,

"The time has come to approach architecture urbanistically and urbanism architecturally[8]."

According to Allen, architects need to question their existing infrastructure. "Infrastructural urbanism marks a return to instrumentality and move away from the representation imperative in architecture." He claims that, through this notion, architecture's contribution can be reassessed in efficiency and complexity while being engaged in time and process to produce and benefit its program[8]. He proposes two equations for urban infrastructure:

"Points + Lines = Complex System
Technique + Material = Expression"

He then develops seven propositions on Infrastructural Urbanism:

1. Infrastructure works not so much to propose specific buildings on given sites, but to construct the site itself. Infrastructure prepares the ground for future building and creates the conditions for future events. Its primary modes of operation are: the division, allocation; and construction of surfaces; the provision of services to support future programs; and the establishment of networks for movement, communication, and exchange. Infrastructure's medium is geography.

2. Infrastructures are flexible and anticipatory. They work with time and are open to change. By specifying what must be fixed and what is subject to change, they can be precise and indeterminate at the same time. They work through management and cultivation, changing slowly to adjust to shifting conditions. They do not progress toward a predetermined state (as with master planning strategies), but are always evolving within a loose envelope of constraints.

3. Infrastructural work recognizes the collective nature of the city and allows for the participation of multiple authors. Infrastructures give direction to future work in the city not by the establishment of rules or codes (top-down), but by fixing points of service, access, and structure (bottom-up). Infrastructure creates a directed field where different architects and designers can contribute, but it sets technical and instrumental limits to their work. Infrastructure itself works strategically, but it encourages tactical improvisation. Infrastructural work moves away from self referentiality and individual expression toward collective enunciation.

4. Infrastructures accommodate local contingency while maintaining overall continuity. In the design of highways, bridges, canals, or aqueducts, for example, an extensive catalog of strategies exist to accommodate irregularities in the terrain (doglegs, viaducts, cloverleaves, switchbacks, etc.), which are creatively employed to accommodate existing conditions while maintaining functional continuity. Nevertheless, infrastructure's default condition is regularity – in the desert, the highway runs straight. Infrastructures are above all pragmatic. Because it operates instrumentally, infrastructural design is indifferent to formal debates. Invested neither in (ideal) regularity nor in (disjunctive) irregularity, the designer is free to employ whatever works given any particular condition.

5. Although static in and of themselves, infrastructures organize and manage complex systems of flow, movement, and exchange. Not only do they provide a network of pathways, as shown in Figure 2.14, they also work through systems of locks, gates, and valves – a series of checks that control and regulate flow. It is therefore a mistake to think that infrastructures can in a utopian way enable new freedoms, that there is a possibility of a net gain through new networks. What seems crucial is the degree of play designed into the system, slots left unoccupied, space left free for unanticipated development. This also opens up the question of the formal description of infrastructural systems: infrastructures tend to be hierarchical and tree-like. However, there are effects of scale (a capillary effect when the elements get very numerous and very small) and effects of synergy (when systems overlap and interchange), both of which tend to produce field conditions that disrupt the overall tendency of infrastructural systems to organize themselves in linear fashion, diagrammatically represented by Louis Kahn in Figure 2.13.

6. Infrastructural systems work like artificial ecologies. They manage the flows of energy and resources on a site, and they direct the density and distribution of a habitat. They create the conditions necessary to respond to incremental adjustments in resource availability, and modify the status of inhabitation in response to changing environmental conditions.

7. Infrastructures allow detailed design of typical elements or repetitive structures, facilitating an architectural approach to urbanism. Instead of moving always down in scale from the general to the specific, infrastructural design begins with the precise delineation of specific architectural elements within specific limits. Unlike other models (planning codes of typological norms for example) that tend to schematize and regulate architectural form and work by prohibition, the limits to architectural design in infrastructural complexes are technical and instrumental. In infrastructural urbanism, form matters, but more for what it can do than for what it looks like[8].

In applying Allen's methods of instrumentality in architecture and infrastructure, this thesis accepts and suggests to challenge each of the seven points in the project's planning and design phase. During that phase the propositions are delineated to their fundamental ideals:

1. Infrastructure is determinant by expression and dictates future event.

2. Infrastructure is open to change and able to adapt.

3. Infrastructure sets technical and instrumental limits to architectural work; they function concurrently.

4. Infrastructure accommodates local conditions and context while prioritizing continuity in the urban fabric.

5. Field conditions applied to infrastructure take advantage of possible new unanticipated freedoms and disrupt standard axial configuration.

6. Infrastructural systems are artificial ecologies and can respond to environmental conditions and affect natural patterns of movement.

7. Infrastructure is formally determined by functional potential and the precise delineation of specificity.

Figure 2.15

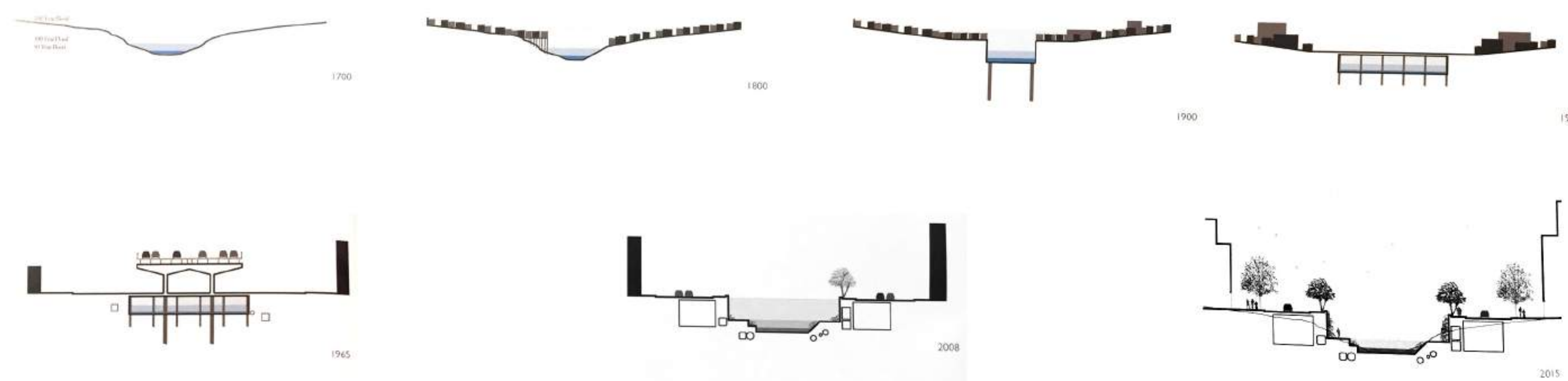


Figure 2.16

2.4.3 CASE STUDY

Cheonggyecheon Restoration Project

Between 1700 and 2015, Seoul, South Korea underwent a series of scalar evolutions in their metro automobile corridor anchored by their vital watercourse. Originally, the city was designed around a flood plain that by 1900 had become site to major highway networks. In 1960, Seoul experienced a population explosion after the Korean War, and the road that covered the Cheonggyecheon River in 1900 became the under-layer of an elevated highway that sought to clear traffic congestion and increase mobility in the urban core[9].

Seoul underwent urban growth with furious pace, and with this project at the peak of it, recovered the original watercourse by adapting the multi-leveled highway space into a large integrated pedestrian park path. "The multiplicity of factors involved in the design and execution of the project itself -- from plant ecology to traffic and water regulation, and the design and integration of discrete urban and architectural objects including lighting fixtures, bridges, viaducts, sustaining walls, staircases, ramps, stepping stones, service structures, seating facilities, and other pieces of street furniture -- comprises every scale of intervention from the individual object to the fully integrated urban infrastructural system[9]."

This project demonstrates the importance of the central network in the urban setting and the possibilities of the different evolutionary roles it can take based on the city's needs. Seoul has existed for over 600 years, and as density has increased over time, the Cheonggyecheon River acts as a "spine for a diverse host of highly determinant urban morphologies[9]."

Fusing the three primary approaches of this thesis, layering infrastructure, reclaiming unused infrastructure, and relating architecture and infrastructure, this project contextually intervened to become a new paradigm for public space. This project is such that we see a shift in the role of infrastructure in the city on a global scale. Emphasizing that large-scale initiatives can be adaptable rather than destructive, the evolution of the Cheonggyecheon has been persistent over centuries in maintaining a relationship between infrastructure, nature, and function in the city[9].

Figure 2.17
Radiant City, 1925

Figure 2.18
Moses Master Plan, 1964

Figure 2.19
Moses's design, 2007

2.5 ADVERSE THEORY

2.5.1 CASE STUDY

Plan-Based Architectural Approach to Urban Planning
Robert Moses, a prominent mid-century city planner in New York, implemented planning strategies that influenced the design of networks around the country. His designs exemplify "car culture," prioritizing pathways for cars and favoring highways over public transit. He did not consider the capabilities of mass transit in his master plans and was criticized for his single-use infrastructural schemes that lost the human scale. While his plans were progressive in his time, Moses's lack in sectional planning has caused highway disruptions through New York's urban fabric[12].

Moses based his schemes on Le Corbusier's Radiant City, a design which segregated people from cars and urban activity. The master plan of Radiant City was a Utopian strategy that augmented density by elevating the built environment above ground. The ground was intended for seamless pedestrian use while air space contained the city's transportation networks[13]. The plan was unsuccessful in urban integration due to its extreme lack of connectivity in fundamental layers of urban environment:

CAR

TRUCKS + STREETCAR

PEDESTRIAN ARCHITECTURAL ACCESS

In contrast to this thesis, plan-based urban strategies such as the work by Moses and Corbusier prioritizes the movement of the automobile. The hybridization of infrastructure requires sectional planning in architectural integration for better human interaction and connectivity in the transportation network. While the Radiant City proposed "to bring machine age man essential pleasures," this thesis proposes to bring the human scale back into the essential network of transport.

3.0

THE INTERCHANGE

3.1 SITE SELECTION

Atlanta as Site
As discussed in 1.1.2, the densification of Atlanta is greatly needed and serves as the testing ground for infrastructural intervention. By addressing a metro interchange's interstitial condition, this study will provide a solution of multi-modal connectivity in the urban fabric of the city.

Site Selection
In selecting the site of study, critical interchanges of infrastructural intensity in metro Atlanta were identified and evaluated by the following criteria: 1) the infrastructures present at the site, 2) urban edges adjacent to and/or created by the site, and 3) its potential for program and hybridization.

By analyzing the city of Atlanta, the areas and intersections of greatest intensity were located at the intersections of Peachtree St and Deering Rd, Armour Dr and Interstate 85, and Krog St and Dekalb Ave due to existing conditions of walkability, urban edges, accessibility by foot or vehicle, and infrastructural use. The intersection of Krog St and Dekalb Ave demands a dense, mutlimodal solution in one intersection to address the many layers of right-of-way; however, the Peachtree St and Armour Dr sites proved potential for connectivity at a greater urban scale.

After study of the Peachtree St and Armour Dr areas, the problems and potential solutions for both areas parallel each other, and, as they are close in proximity (1.5 miles), they can become a corridor in which many connectivity issues caused by and near the sites can be addressed by a series of hybrization interventions at critical nodes throughout the site.

The combined Peachtree - Armour corridor has existing infrastructure of water, streets, interstates, freight rail, passenger rail, mass transit, and Atlanta BeltLine development. As shown in the following site diagrams, there is the potential for connection from Atlantic Station > Peachtree St > Armour Dr > Monroe Dr > Peachtree Hills. By strategically connecting trails, transit, and economic developent, the hybridization of these single-use infrastructures at this site can better provide urban connectivity in Atlanta.

Atlanta Street Grid

PEACHTREE ST + DEERING RD

INFRASTRUCTURES PRESENT:

Secondary Road
Tertiary Road
Interstate
AMTRAK
CSX Rail
Unused Rail Line

URBAN EDGES CREATED:

No pedestrian right-of-way on Peachtree St
Unused infrastructure
Urban scale problems

POTENTIAL PROGRAM:

Connection to Atlantic Station
BeltLine spur trail to connect Atlantic Station to Armour Dr
New MARTA station at midpoint between Midtown and Lindbergh
Park

ARMOUR DR + I-85

INFRASTRUCTURES PRESENT:

Tertiary Road
Interstate
AMTRAK
CSX Rail
MARTA Rail
Peachtree Creek
BeltLine

URBAN EDGES CREATED:

Disconnected adjacent neighborhoods
Armour Dr accessibility
Adjacent rail boundary
No walkability

POTENTIAL PROGRAM:

Connection to Atlantic Station
BeltLine spur trail to connect Atlantic Station to Armour Dr
New MARTA station at midpoint between Midtown and Lindbergh
Park as buffer between zones and connector to Path 400

KROG ST + DEKALB AVE

INFRASTRUCTURES PRESENT:

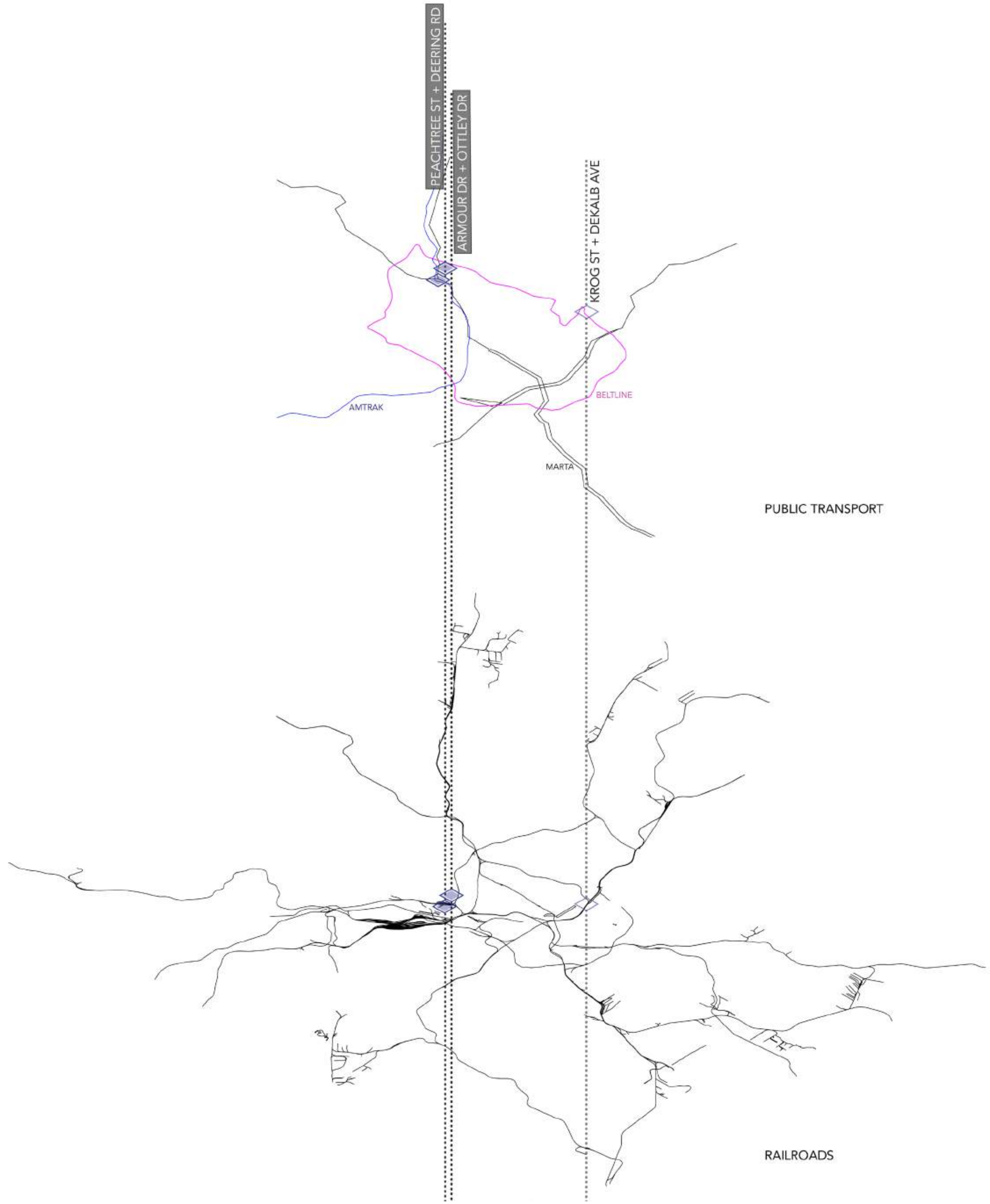
Secondary Road
Tertiary Road
BeltLine
MARTA Rail
Hulsey Yard

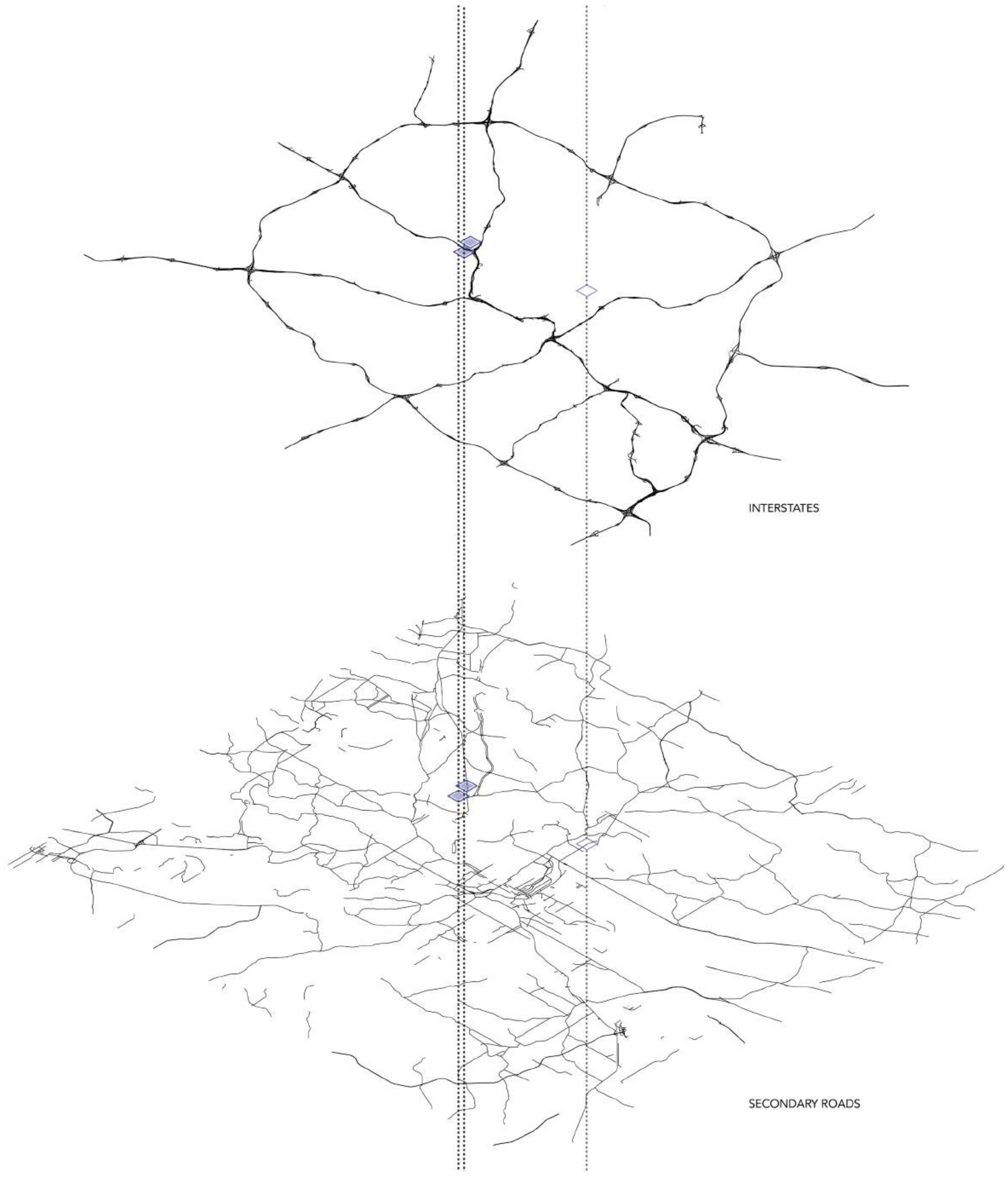
URBAN EDGES CREATED:

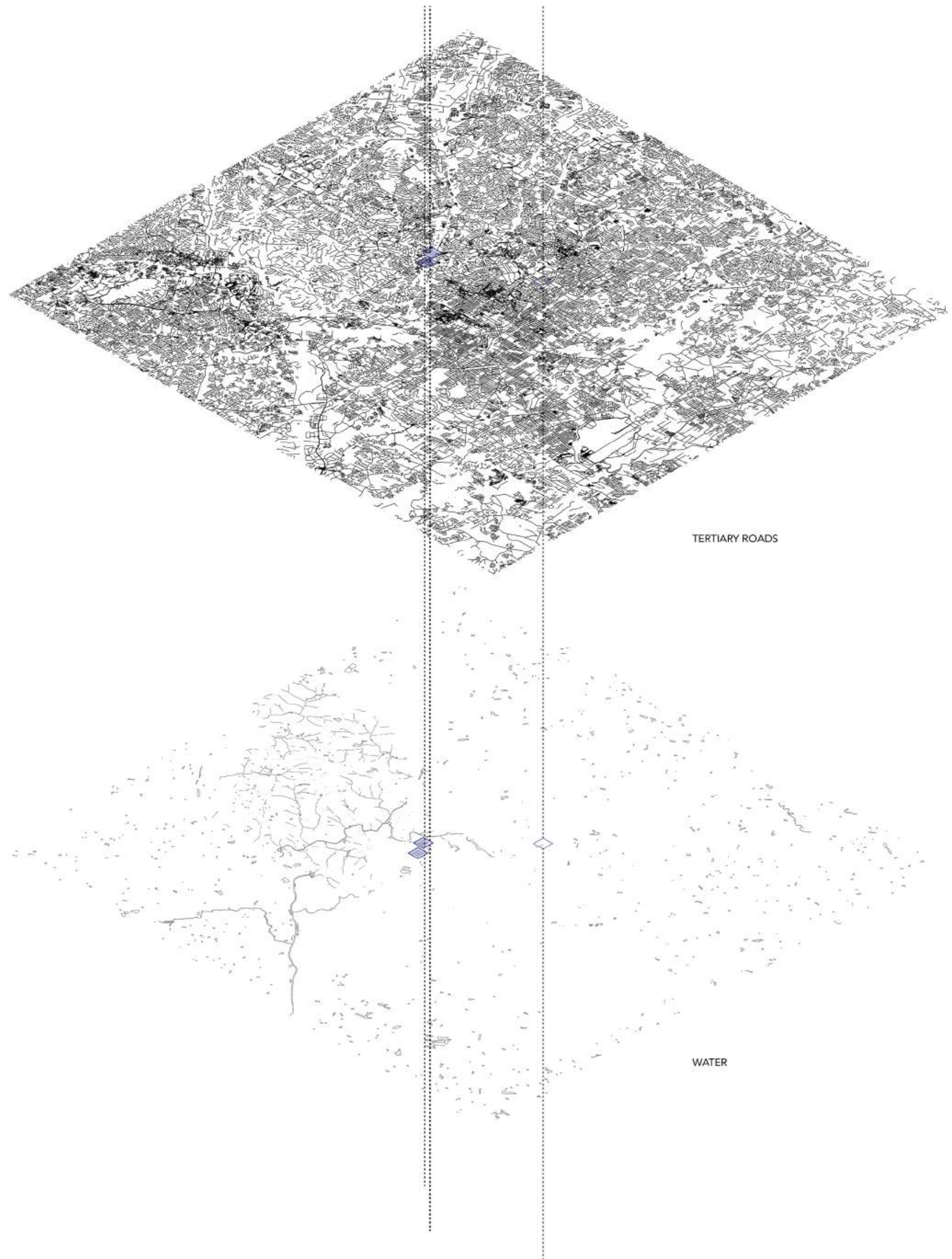
Krog St tunnel
Hulsey Yard boundary
BeltLine development interrupted along Dekalb Ave

POTENTIAL PROGRAM:

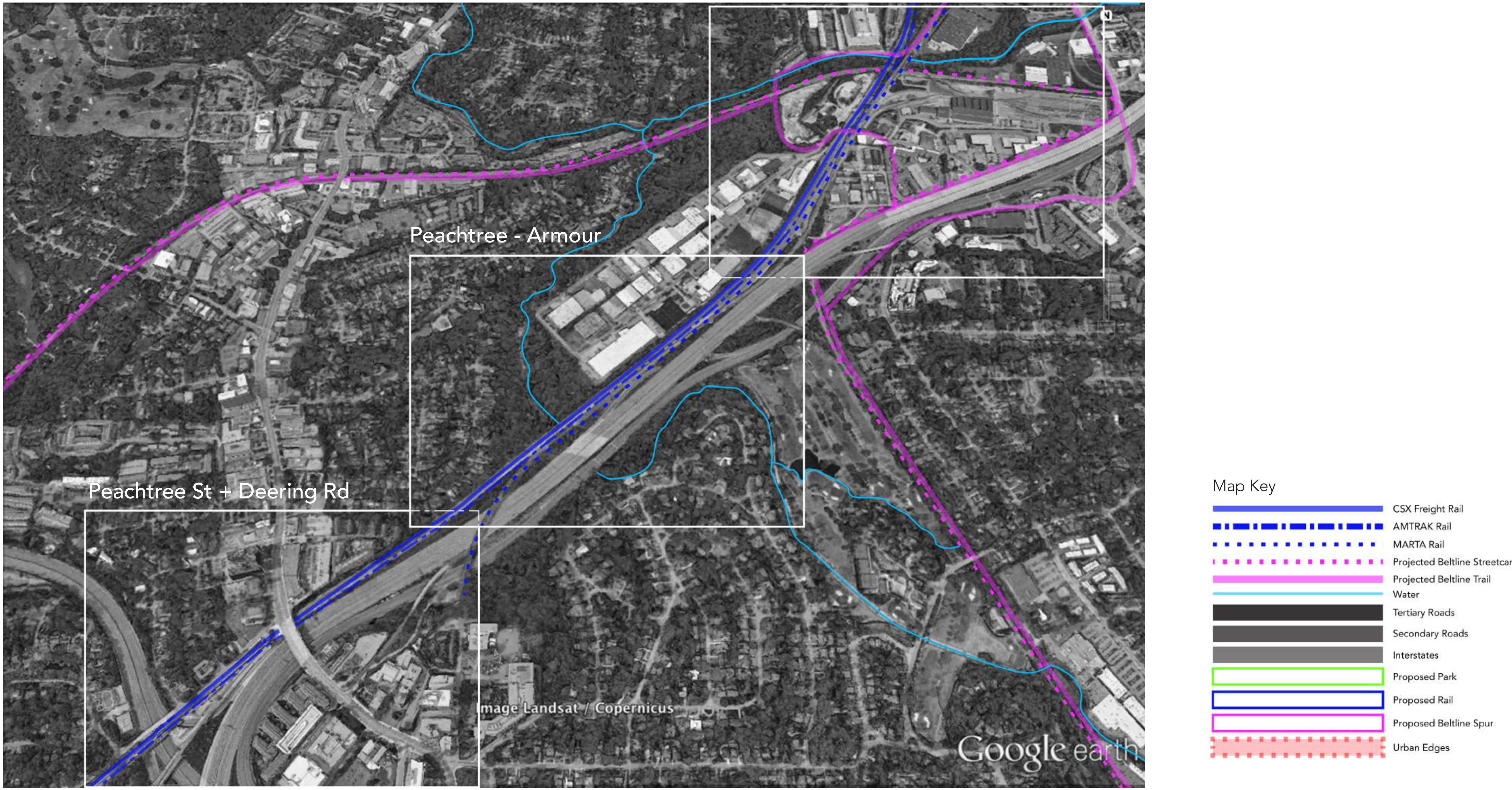
Hybridized BeltLine solution across Dekalb Ave
Krog St Market integration
New MARTA station between Inman Park and King Memorial


PEACHTREE ST + DEERING RD
ARMOUR DR + OTTLEY DR
KROG ST + DEKALB AVE
AMTRAK
BELTLINE
MARTA
PUBLIC TRANSPORT
RAILROADS


INTERSTATES
SECONDARY ROADS


TERTIARY ROADS
WATER

3.2 SITE EXTENT



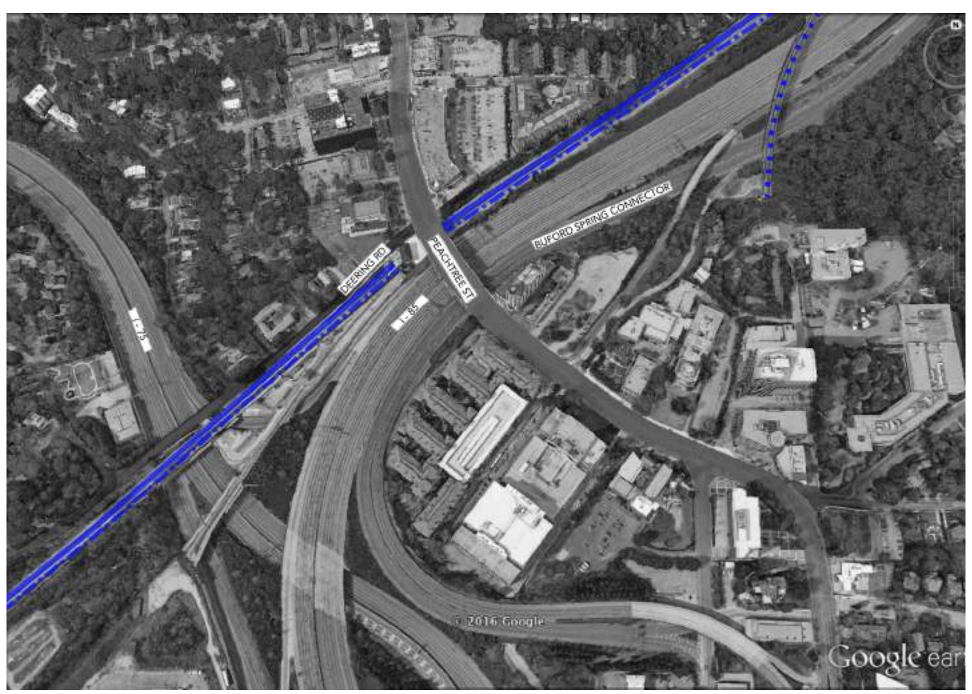
Existing Infrastructure

Peachtree St + Deering Rd

Peachtree - Armour

Armour Dr + I-85

Existing Conditions

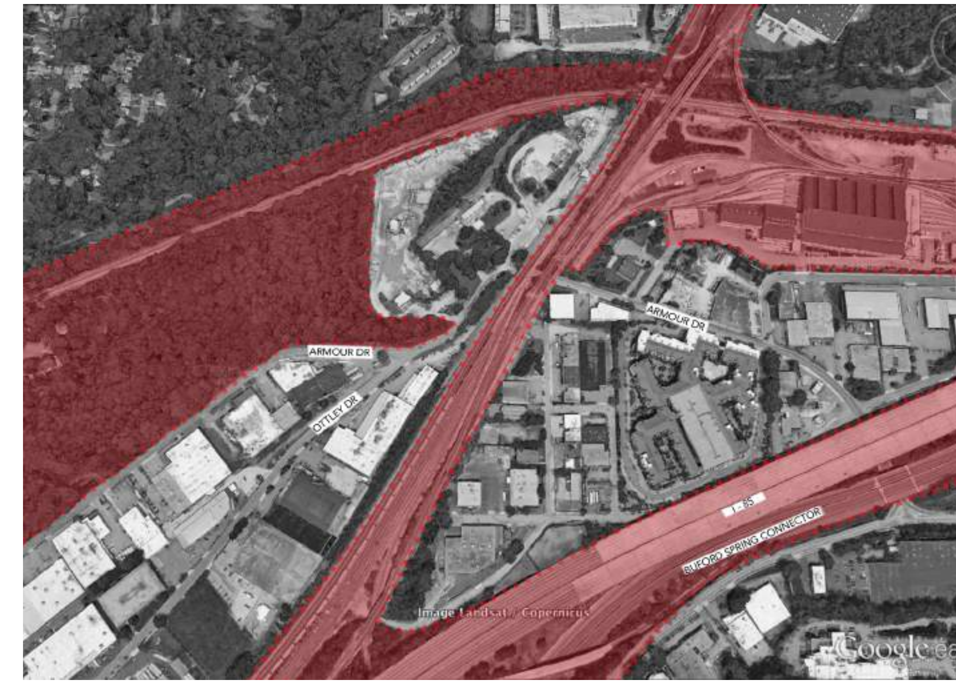


Existing Infrastructure

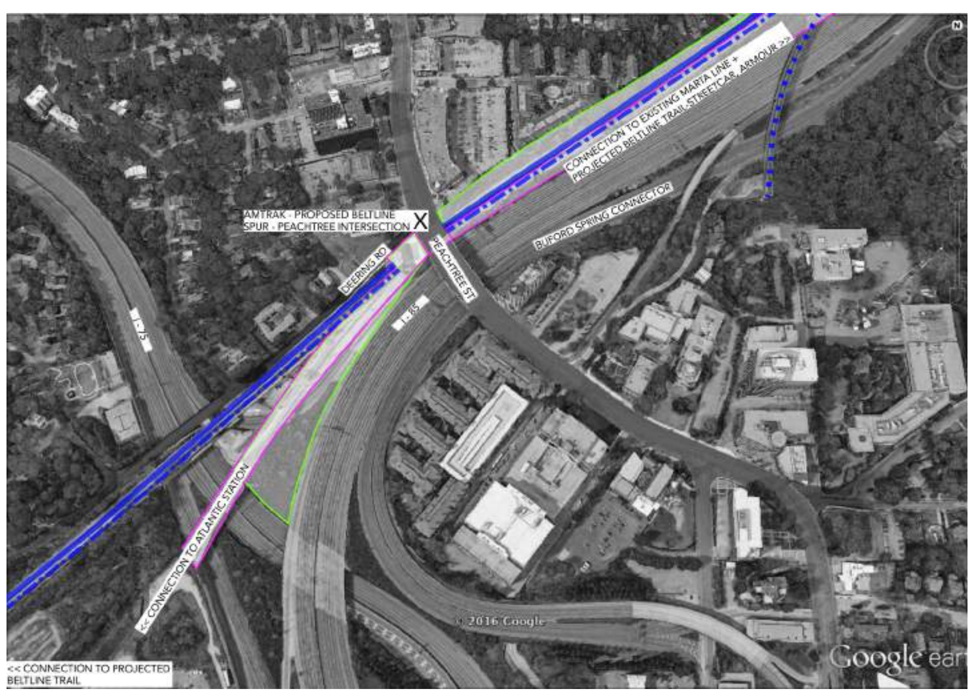
Peachtree St + Deering Rd

Peachtree - Armour

Armour Dr + I-85



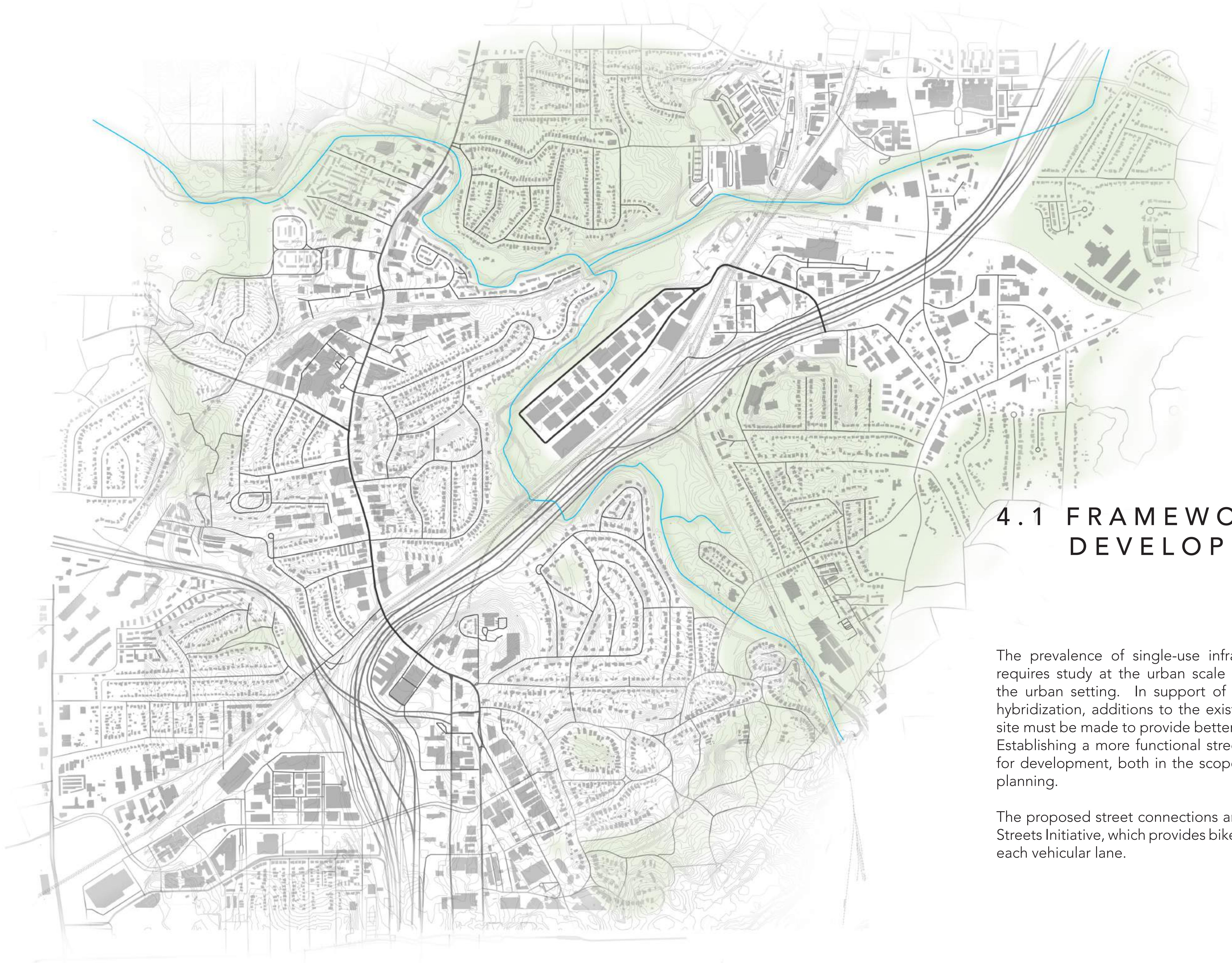
Urban Edges



Potential Program

4.0

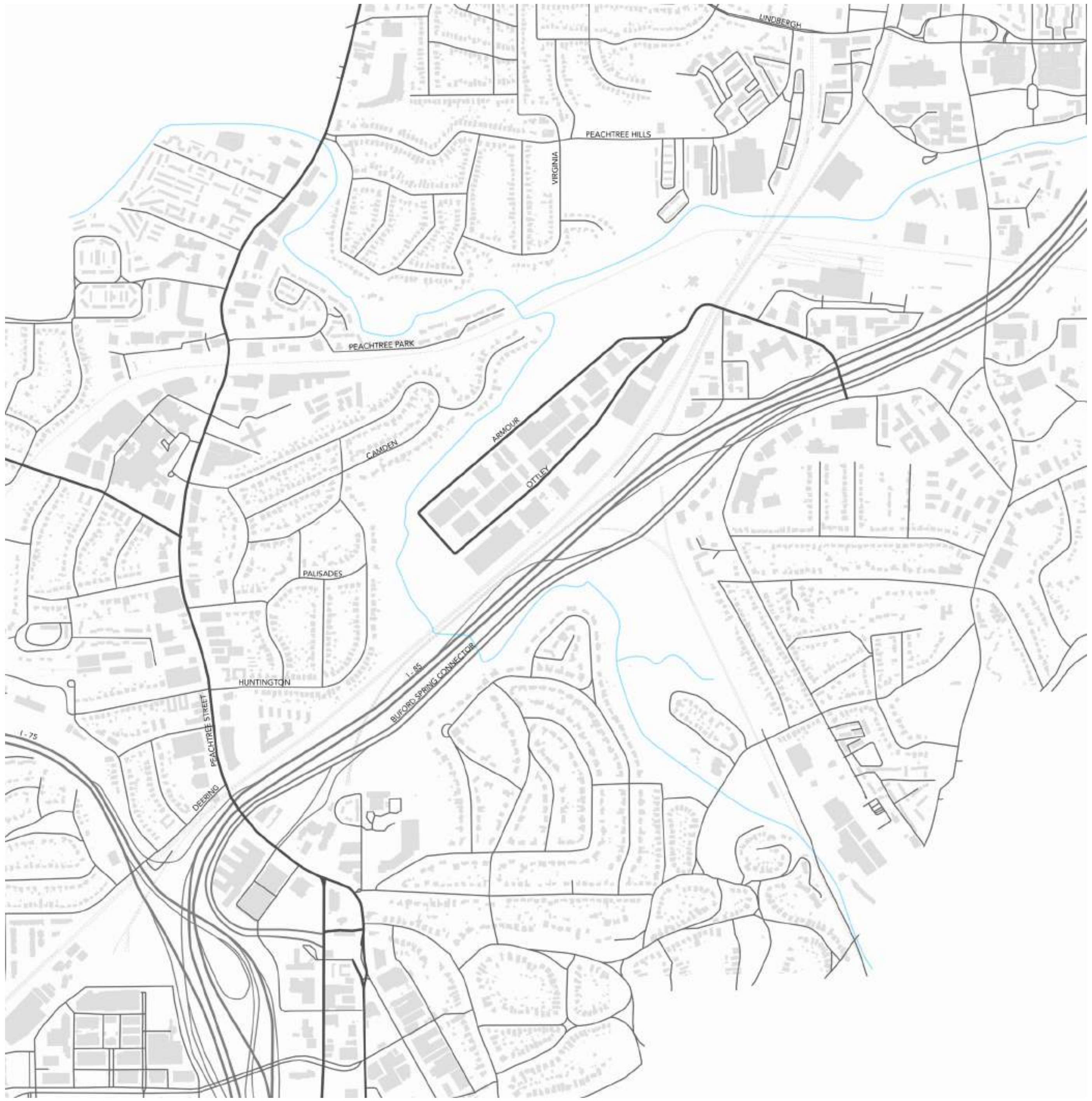
PROGRAM FOR HYBRIDIZATION



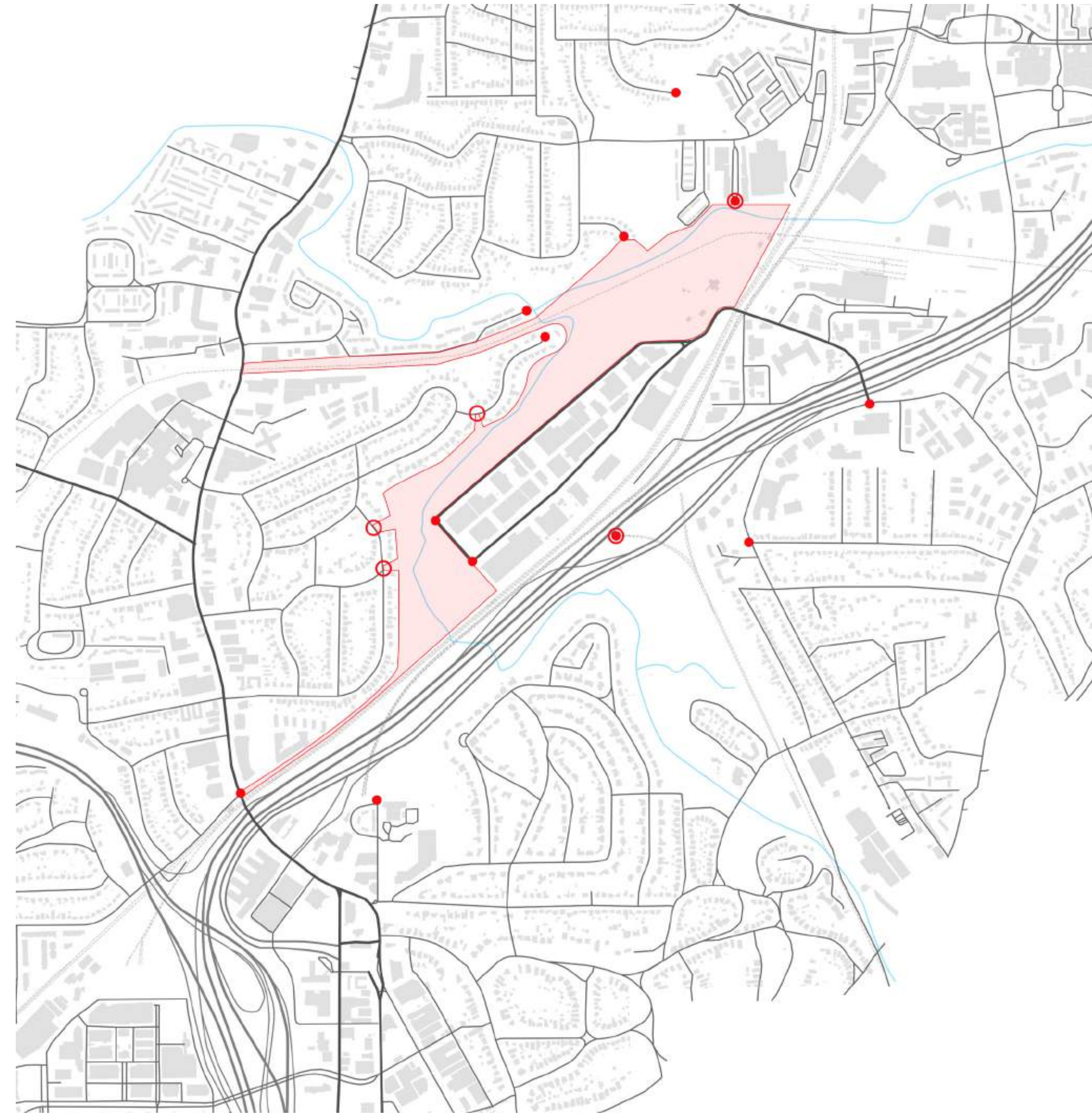
4.1 FRAMEWORK FOR DEVELOPMENT

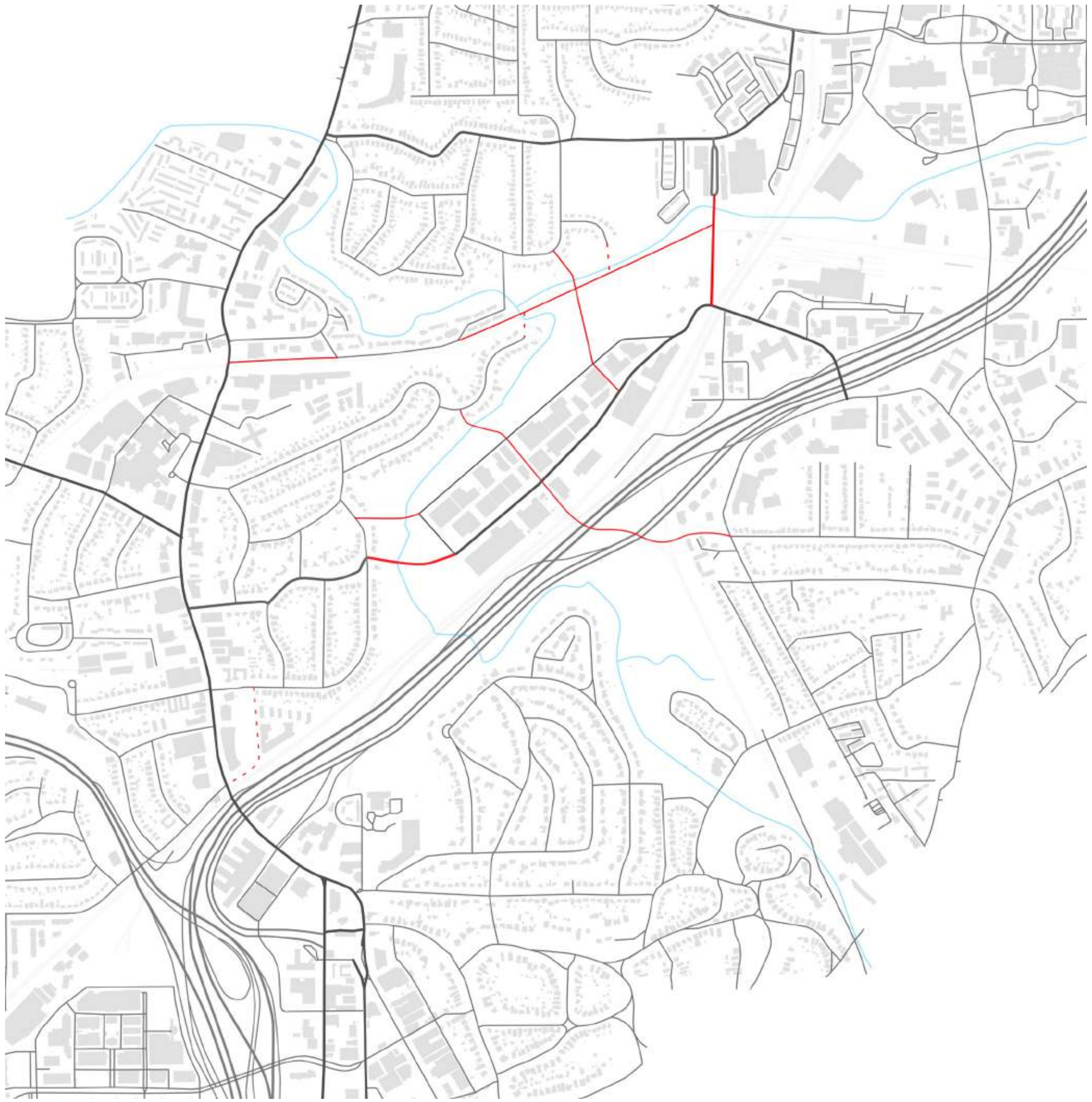
The prevalence of single-use infrastructures existing at the site requires study at the urban scale to create multi-use program in the urban setting. In support of this proposal for infrastructural hybridization, additions to the existing street grid at and near the site must be made to provide better connectivity within the corridor. Establishing a more functional street grid positions the framework for development, both in the scope of this thesis as well as future planning.

The proposed street connections are to comply with the Complete Streets Initiative, which provides bike lanes and large sidewalks along each vehicular lane.



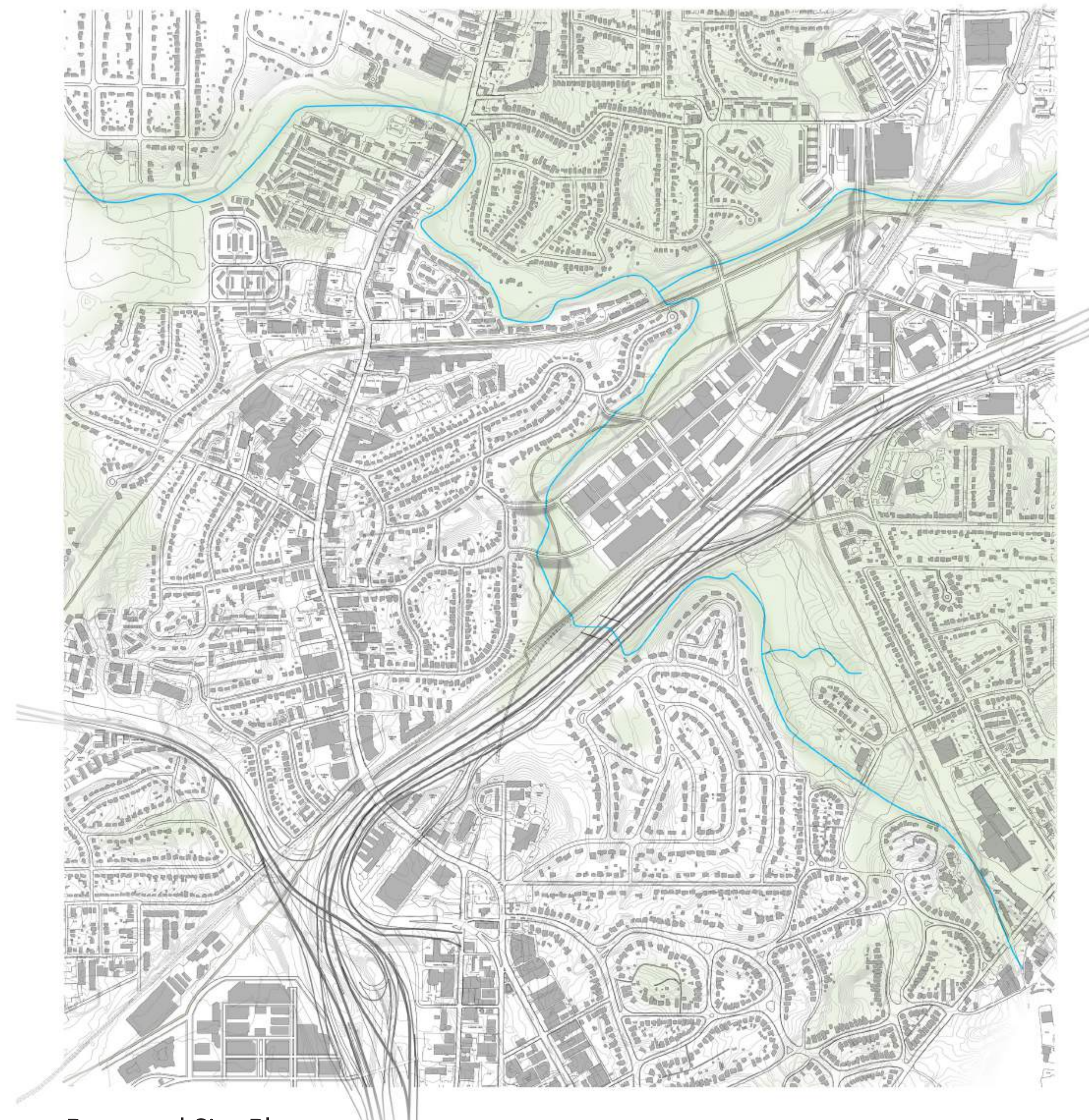
Existing Street Grid


Opportunities for Connection


Proposed Street Grid

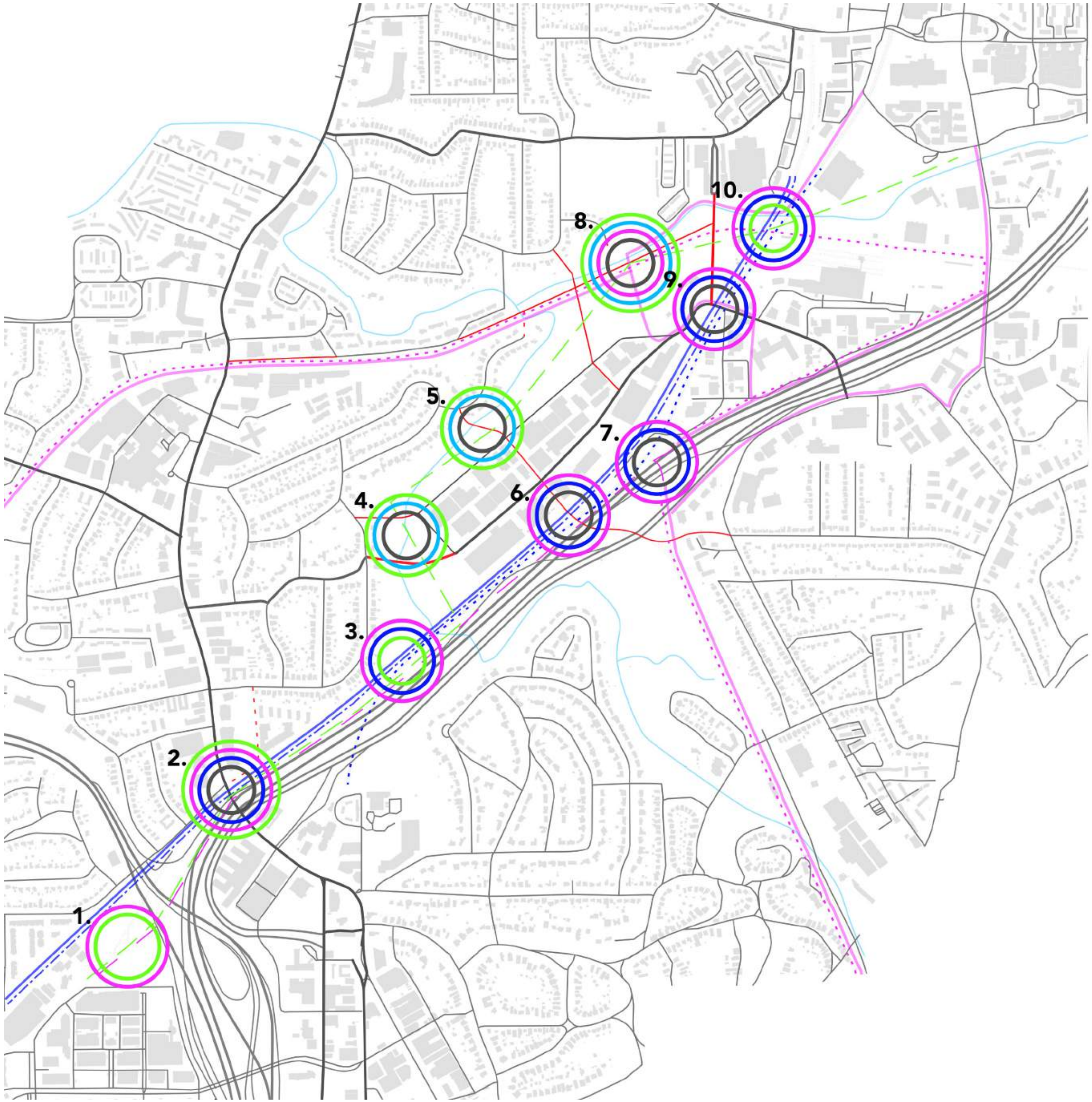

Proposed Street Grid with Existing Infrastructure

Existing Site Plan



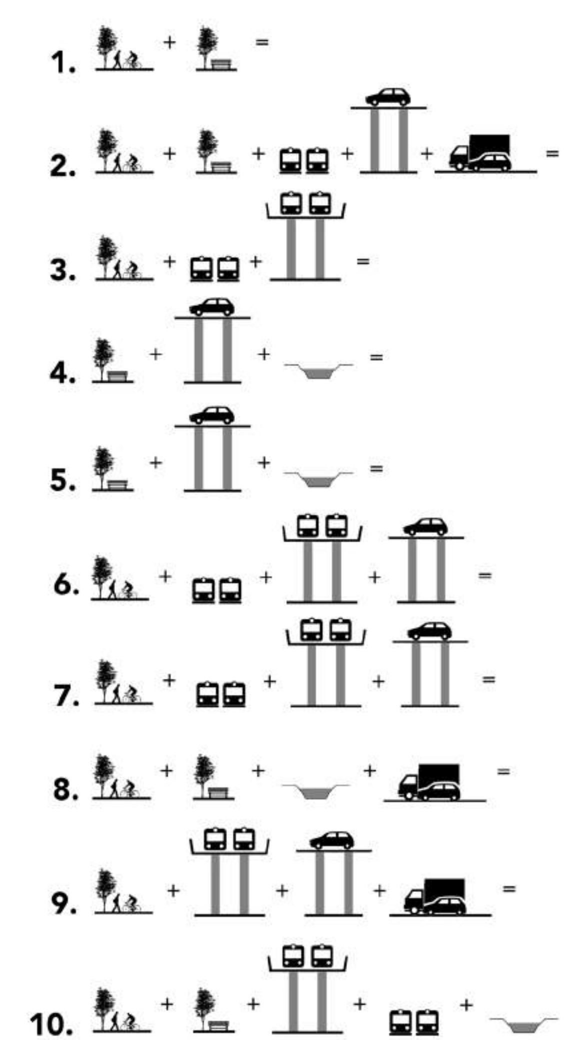
Proposed Site Plan

4.2 PROGRAM INTEGRATION



Within the framework of the new street grid creates opportunities for hybridization at the intersections of existing and proposed infrastructure. This presents 10 intersections of opportunity for hybridization. Some intersections more complex than others, the hybridization process requires the layering and reclaiming of infrastructure, as well as the integration of architecture and infrastructure.

Program at Nodes



5.0

DESIGN FOR HYBRIDIZATION

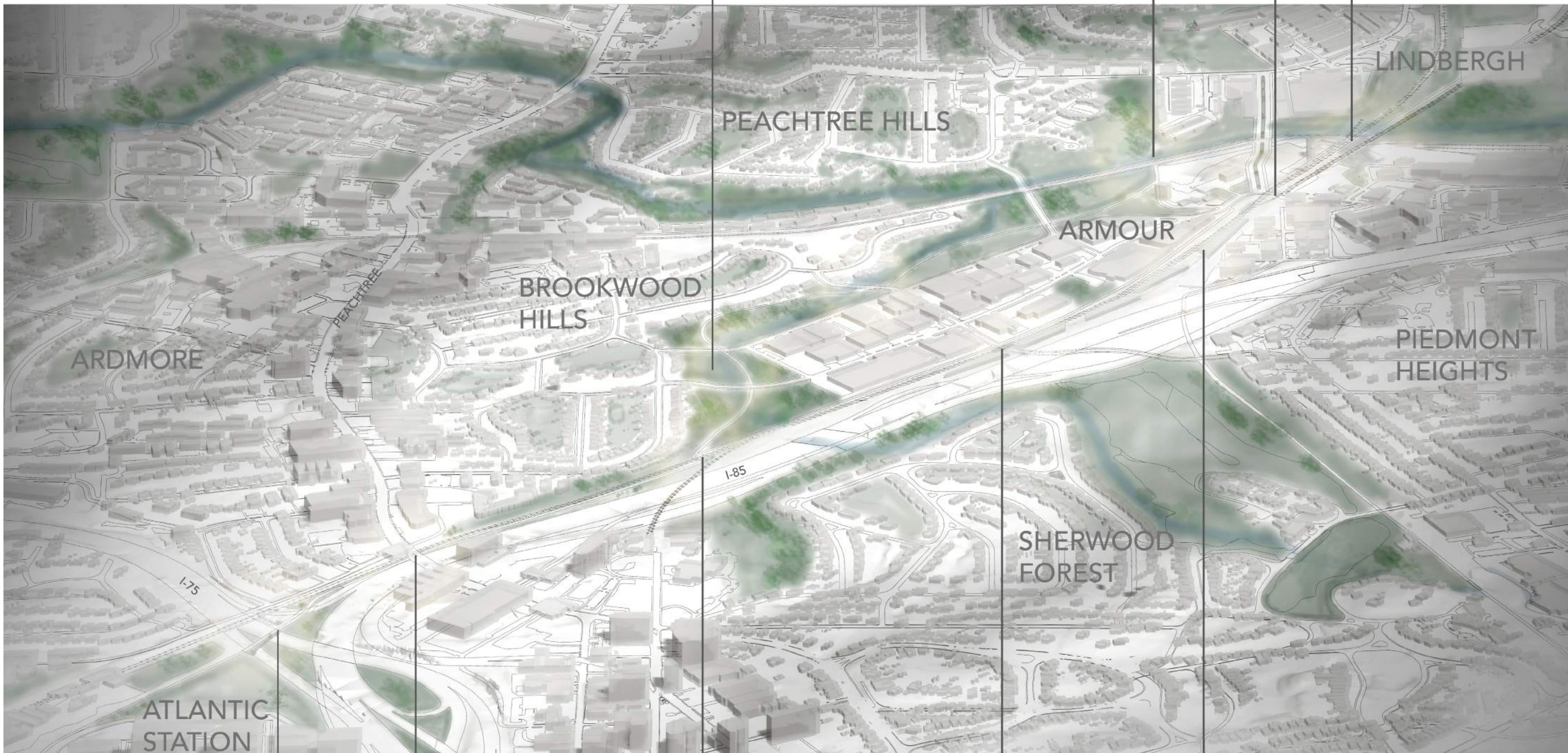
5.1 PROPOSED PLAN

INTERSECTIONS #4 AND #5
By utilizing empty lots in the Brookwood Hills neighborhood, Armour Drive and Ottley Drive extend westward, bridging over the proposed park.

INTERSECTION #8
Along the projected Beltline trail is an addition to the street grid that connects to Peachtree Street. This intersection addresses the relationship between automobiles and pedestrians.

INTERSECTION #9
The street condition of Armour Drive is altered to improve walkability along the projected Beltline trail.

INTERSECTION #10
The proposed pedestrian path extends to Lindbergh to connect to the end of the existing Path 400.



INTERSECTION #1
The reuse of an unused rail bridge connects the proposed Beltline spur along I-85 to Atlantic Station.

INTERSECTION #2
The proposed Beltline spur runs parallel to existing AMTRAK and CSX lines, running through the AMTRAK station with a ramp for pedestrian access to Peachtree Street.

INTERSECTION #3
The proposed Beltline spur breaks off into a proposed park along Peachtree Creek. The park acts as a connective buffer between the surrounding neighborhood and Armour.

INTERSECTION #6
Along the Beltline spur is a multi-modal complex with retail shops and a MARTA platform above CSX and AMTRAK lines. The complex has pedestrian access to Armour as well as an intersecting street from Brookwood Hills to Piedmont Heights that utilizes an unused rail line that bridges over I-85.

INTERSECTION #7
This intersection links the proposed Beltline spur with the projected Beltline trail. Here, there is access to Armour and the multi-modal complex, where there is another MARTA quick stop.

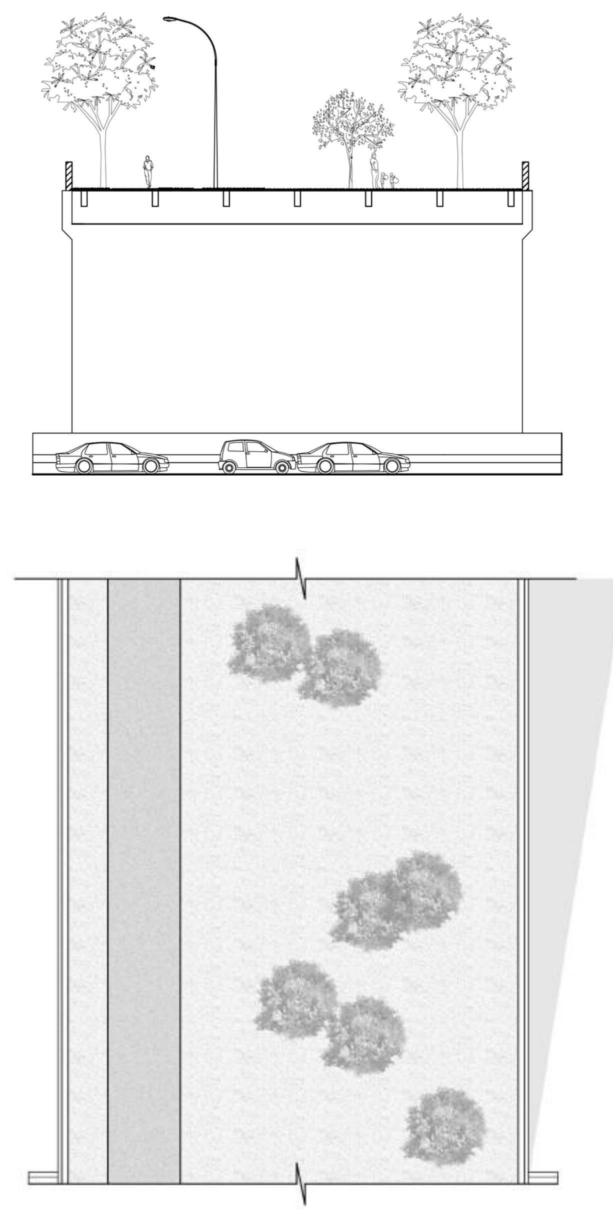
Proposed Site Plan

Once a new street grid has been introduced, the framework for development provides opportunities for multi-modal intervention. The proposed solution to this site's interstitial problem is to implement a new MARTA station at intersection #7, at the midpoint between a three mile stretch with no stops. This MARTA station will be situated at a proposed BeltLine spur trail, which spans alongside AMTRAK, connecting the projected BeltLine trail at Armour Drive to Peachtree Street. By utilizing the unused freight bridge that spans over Interstate 75, this proposed BeltLine spur trail will continue west from Peachtree Street to Atlantic Station.

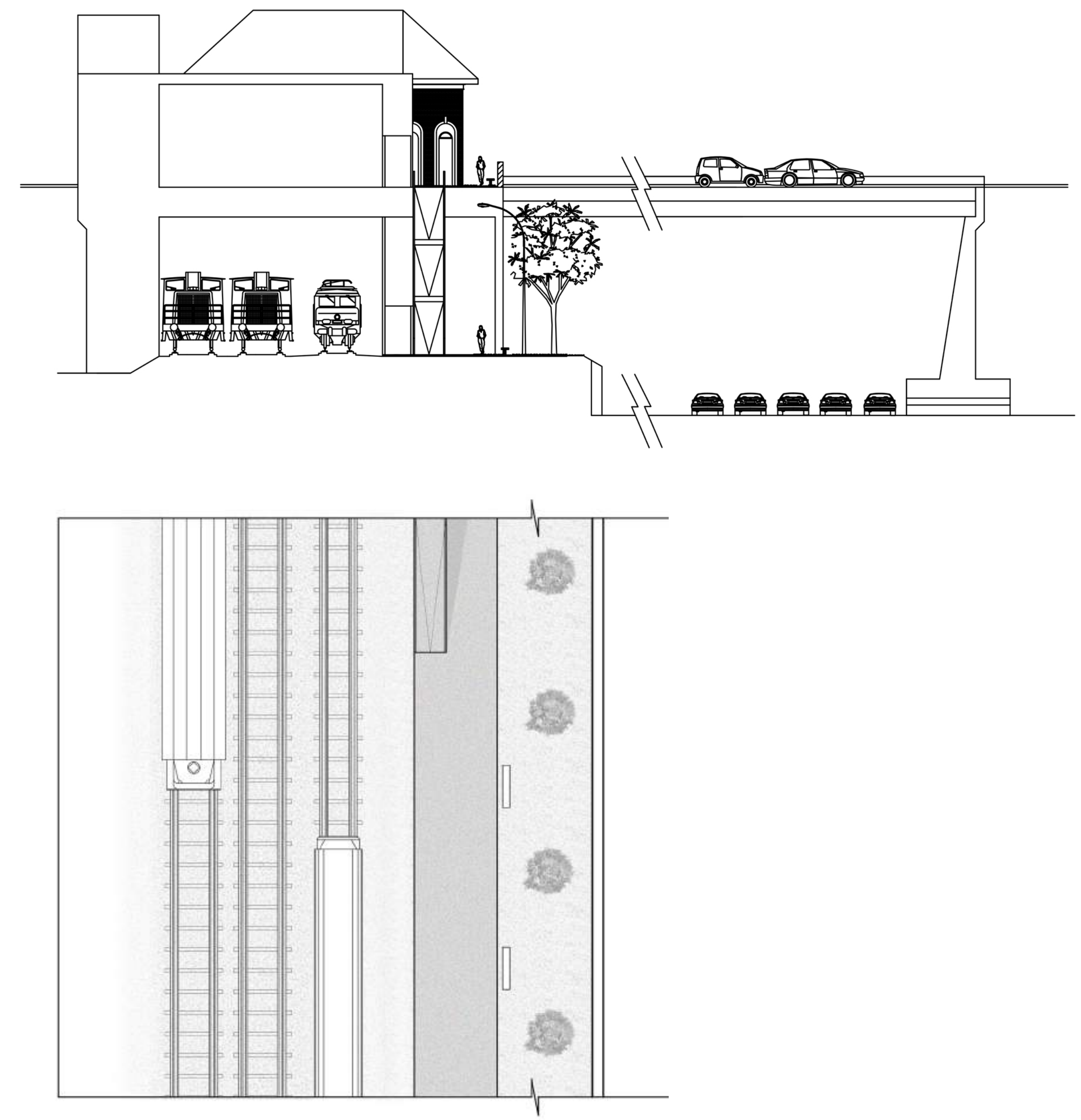
In macro scale, this proposal will provide a one and a half mile connection between Atlantic Station to the Armour Drive area, and beyond through public transport. The proposed BeltLine spur trail will split west of the Armour Drive area, with one trail continuing east to the proposed MARTA station and the projected BeltLine path. The other trail will go through a proposed park, serving as a connective buffer between the Brookwood Hills neighborhood and the Armour Drive area, and lead to the end of the PATH 400 trail at the corner of Adina Drive and Piedmont Road.

In micro scale, this proposed corridor which presents crossings of many types of transportation infrastructures, will have a series of 10 multi-modal intersections to eliminate the existing interstitial boundaries that limit pedestrian access at and through the site. The multi-modal intersections will be designed based on the concepts of urban hybridization theories: layering and reusing infrastructure and relating the infrastructure to architecture. The designs are based on modulated variables derived from traits of each infrastructural family present at an intersection.

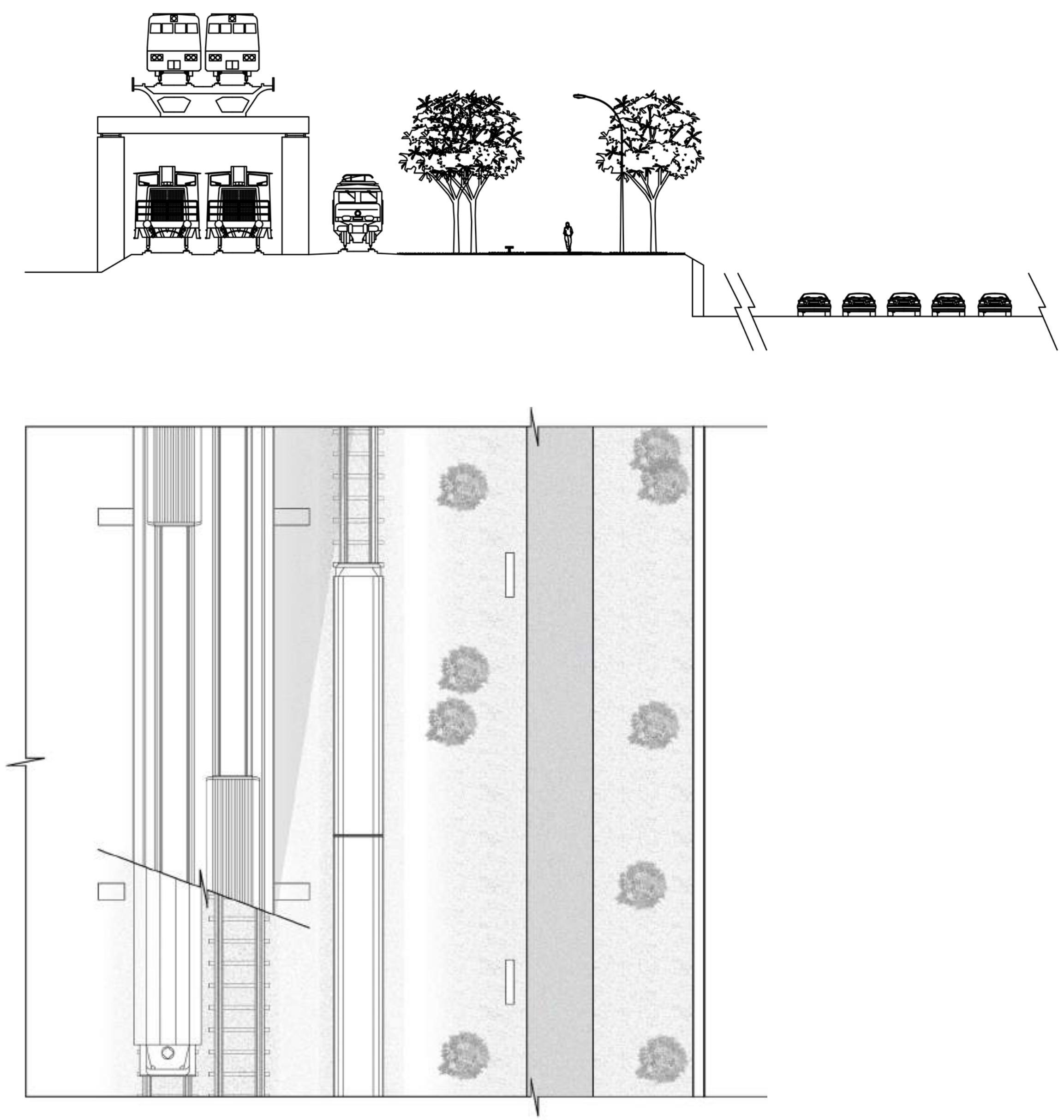
5.2 PROPOSED INTERSECTIONS

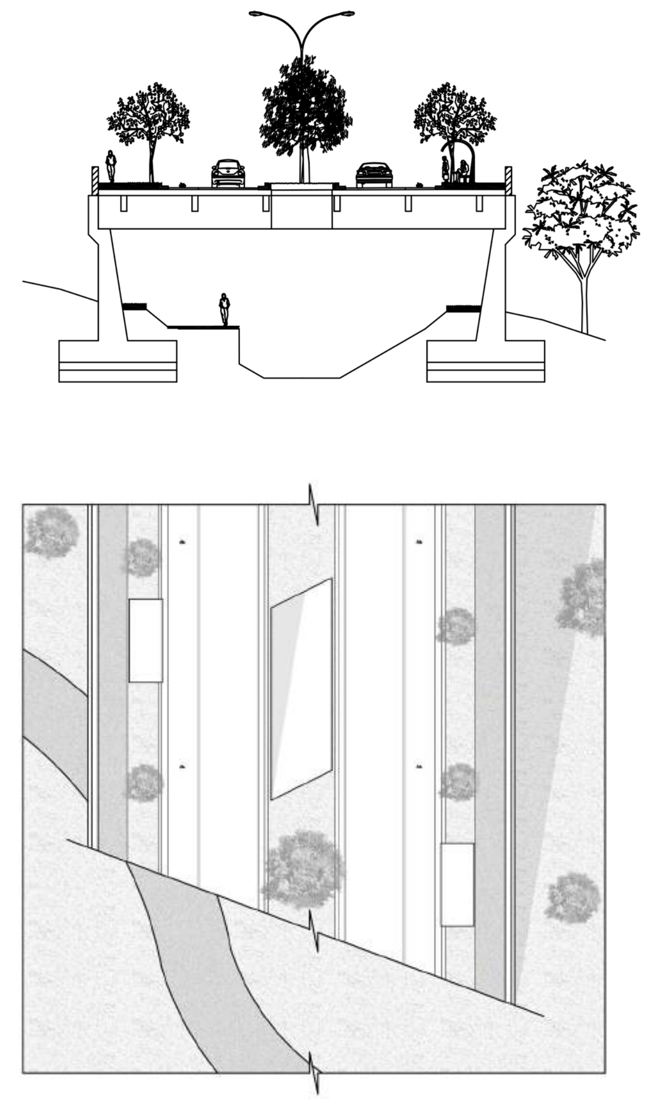


1 INTERSECTION ONE
SCALE: 1/32"=1'-0"



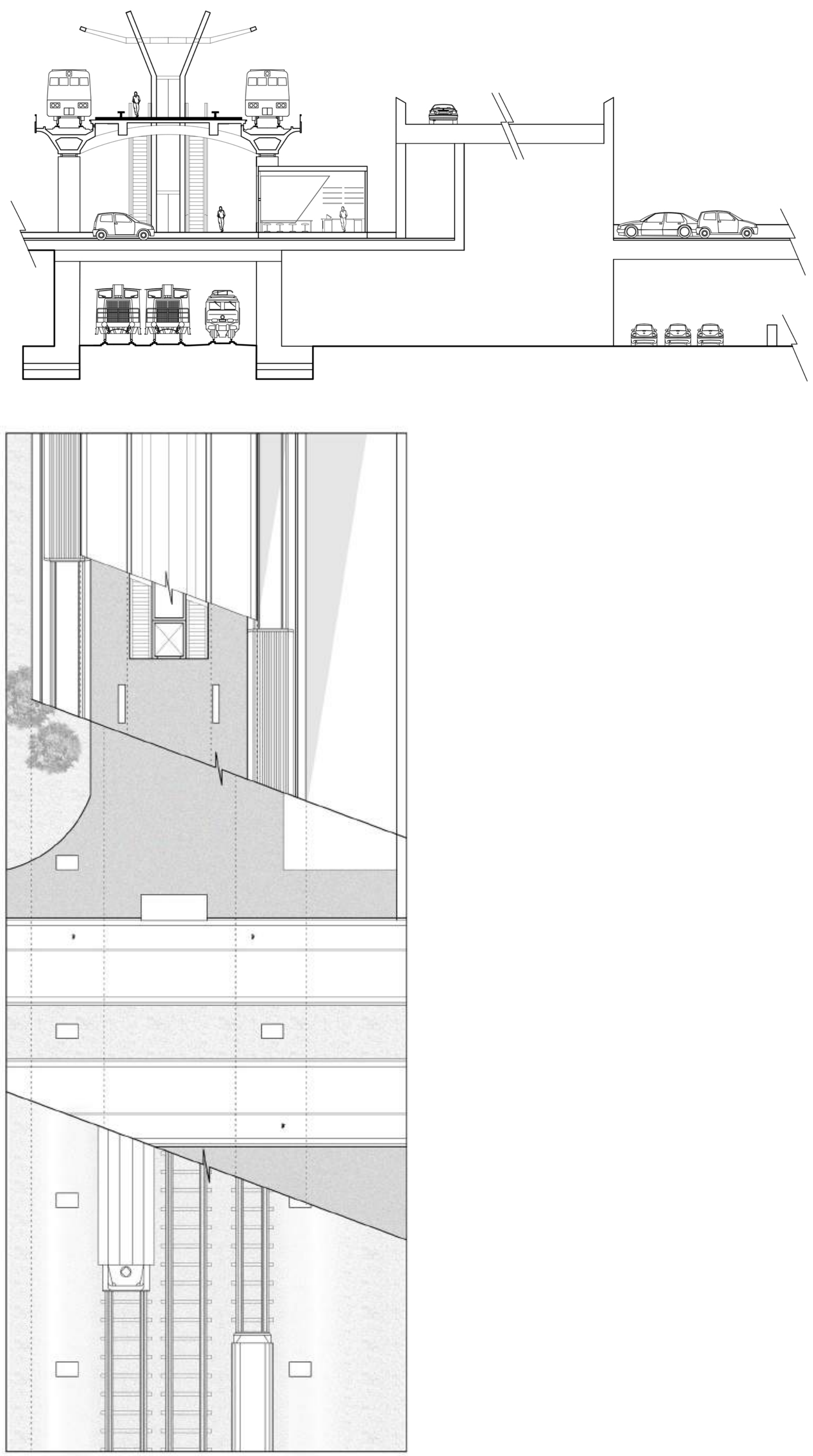
2 INTERSECTION TWO
SCALE: 1/32"=1'-0"



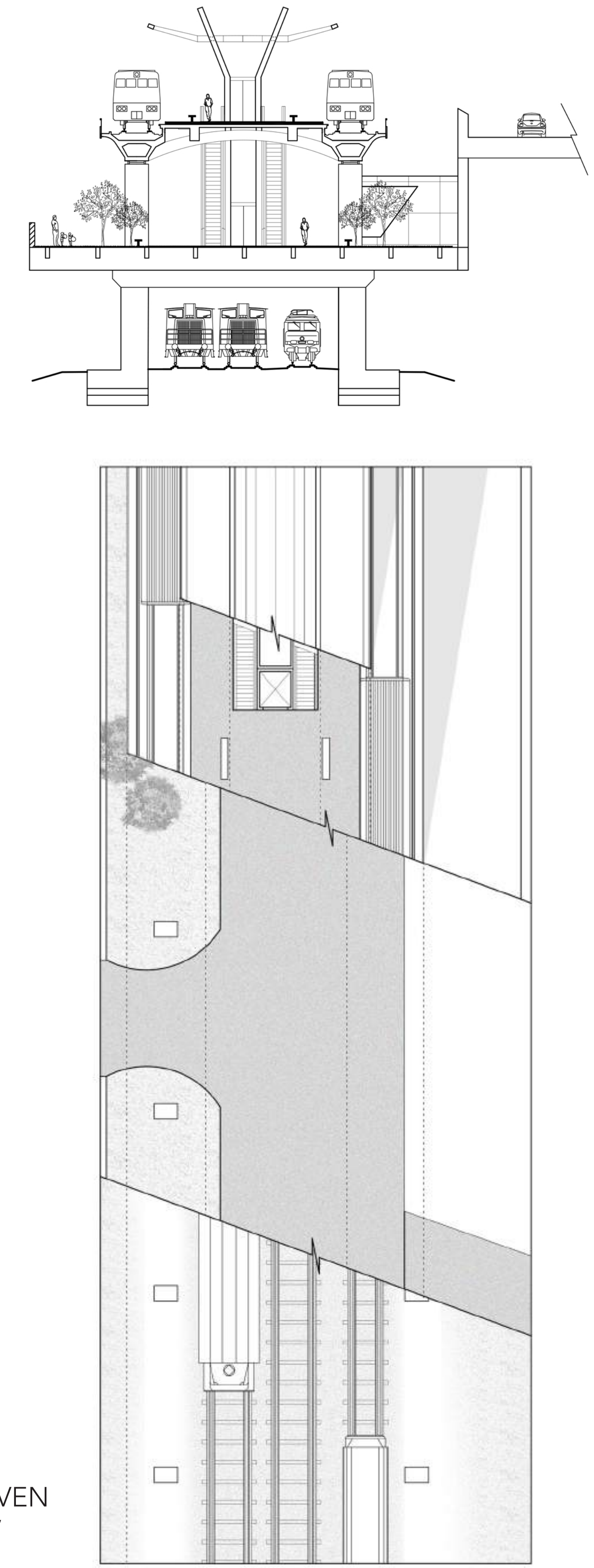


3 INTERSECTION THREE
SCALE: 1/32"=1'-0"

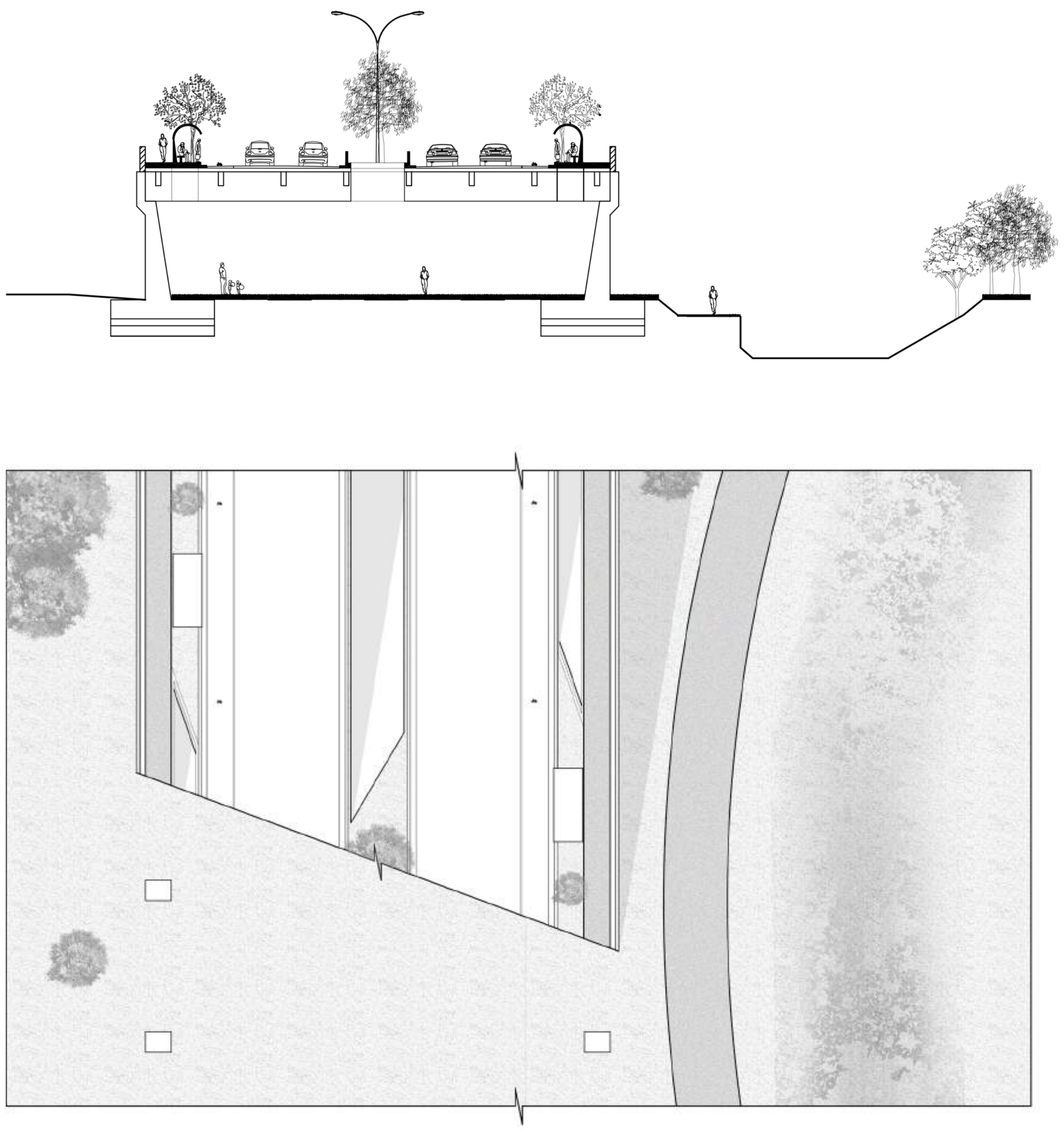
4
5
INTERSECTIONS FOUR + FIVE
SCALE: 1/32"=1'-0"



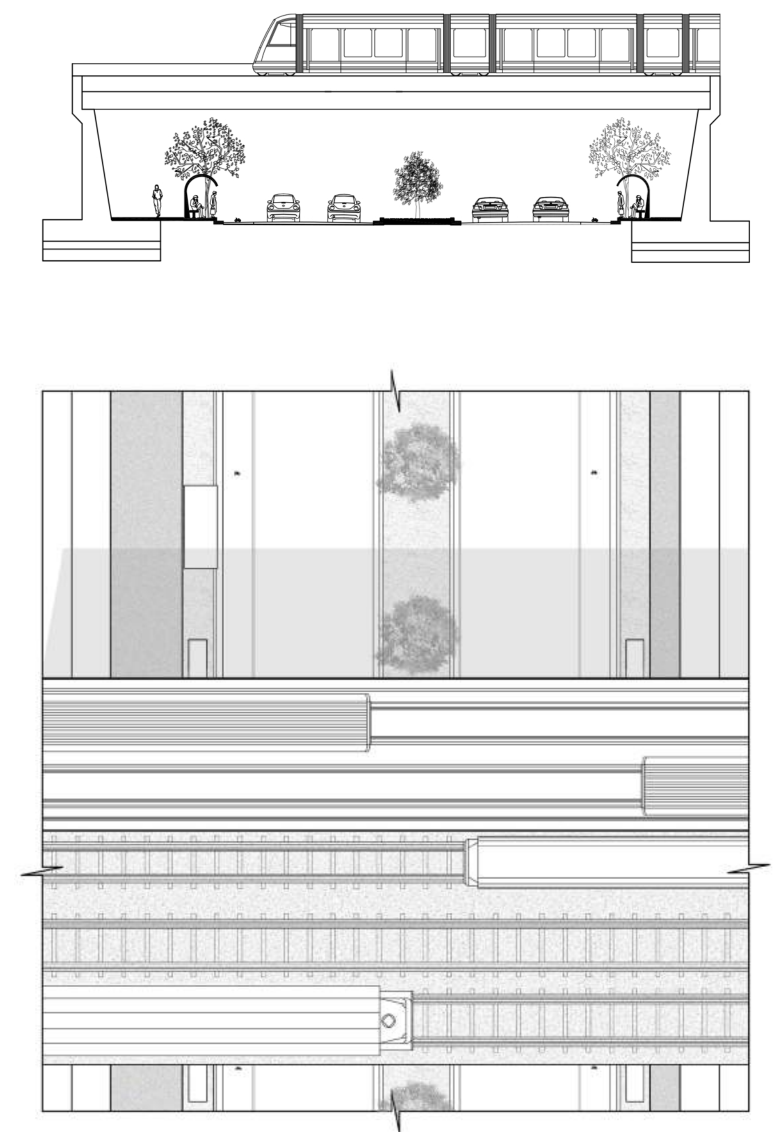
6 INTERSECTION SIX
SCALE: 1/32"=1'-0"



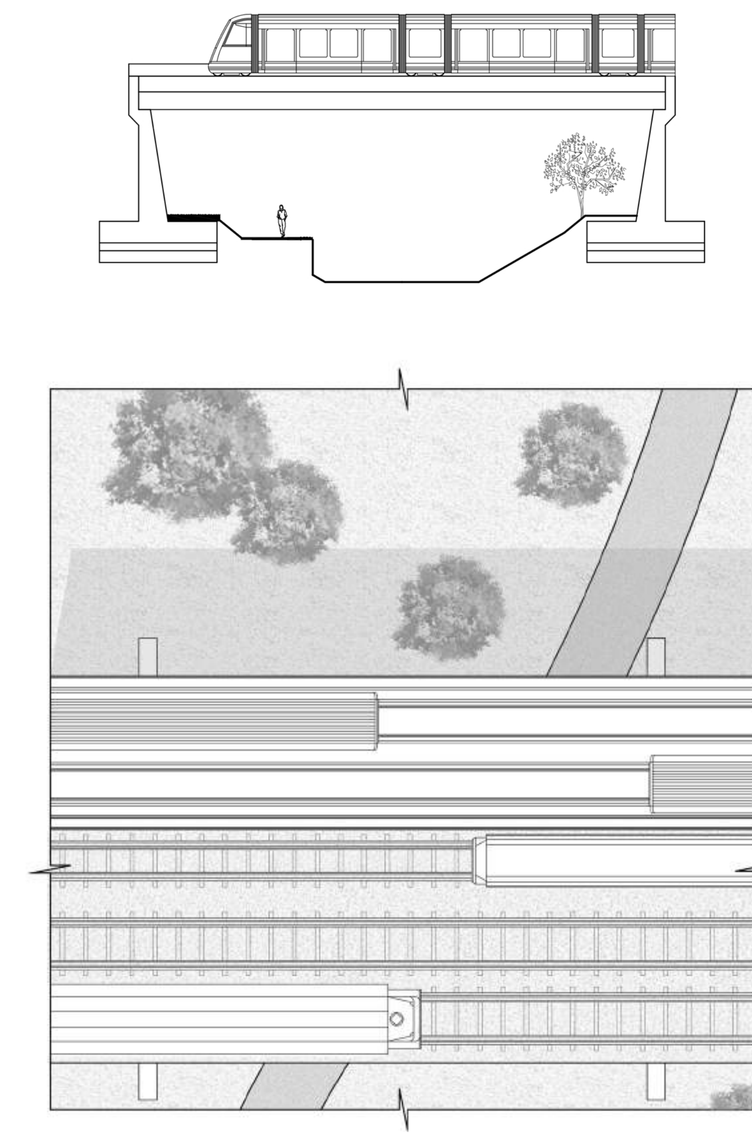
7 INTERSECTION SEVEN
SCALE: 1/32"=1'-0"



8 INTERSECTION EIGHT
SCALE: 1/32″=1′-0″



9 INTERSECTION NINE
SCALE: 1/32″=1′-0″

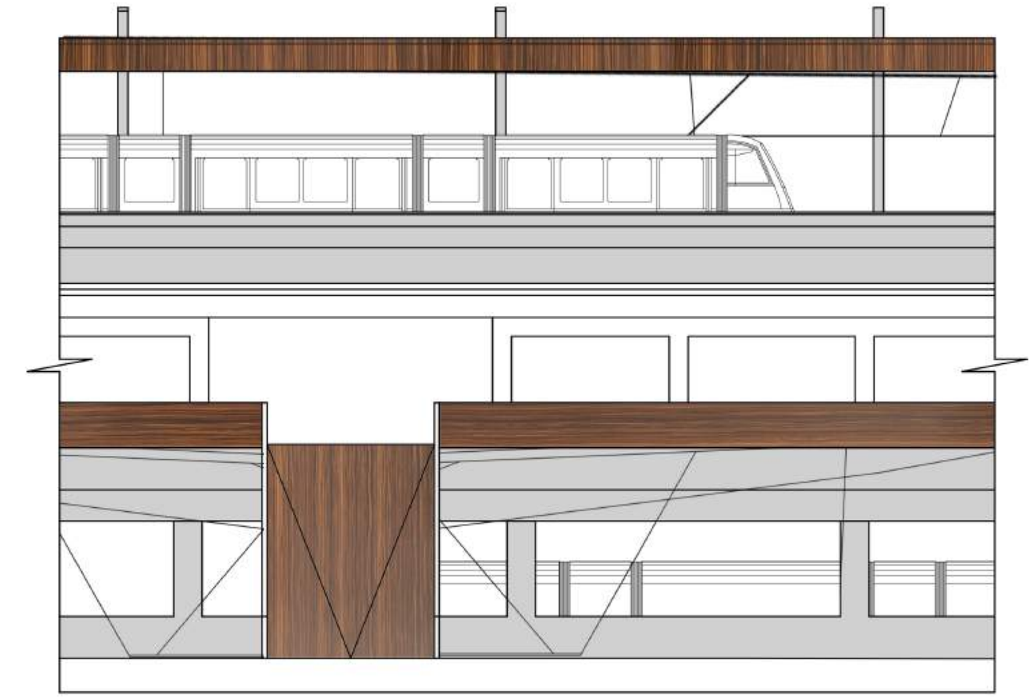


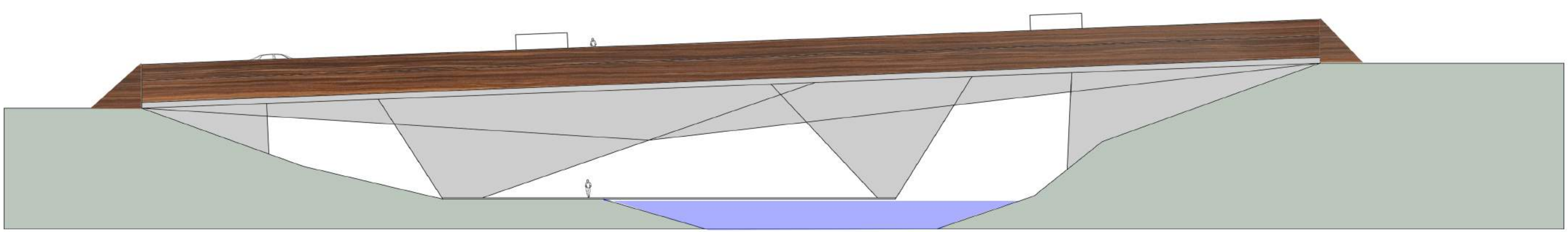
10 INTERSECTION TEN
SCALE: 1/32″=1′-0″

INFRASTRUCTURAL FAMILY

The hybridization of infrastructure requires that the "traits" of each form (bridge, platform, elevated platform, roadway, park, sidewalk, etc.) be consistent in order to layer the elements.

Infrastructural families are not site specific and allow the infrastructural "module" to be implemented at any intersection. While infrastructural style remains consistent in the traits of each type, materiality will bring forth site-specific design. In the two examples of proposed intersections on this page, the elevation of the multi-layered station and the elevation of the bridge share infrastructural style and materiality.



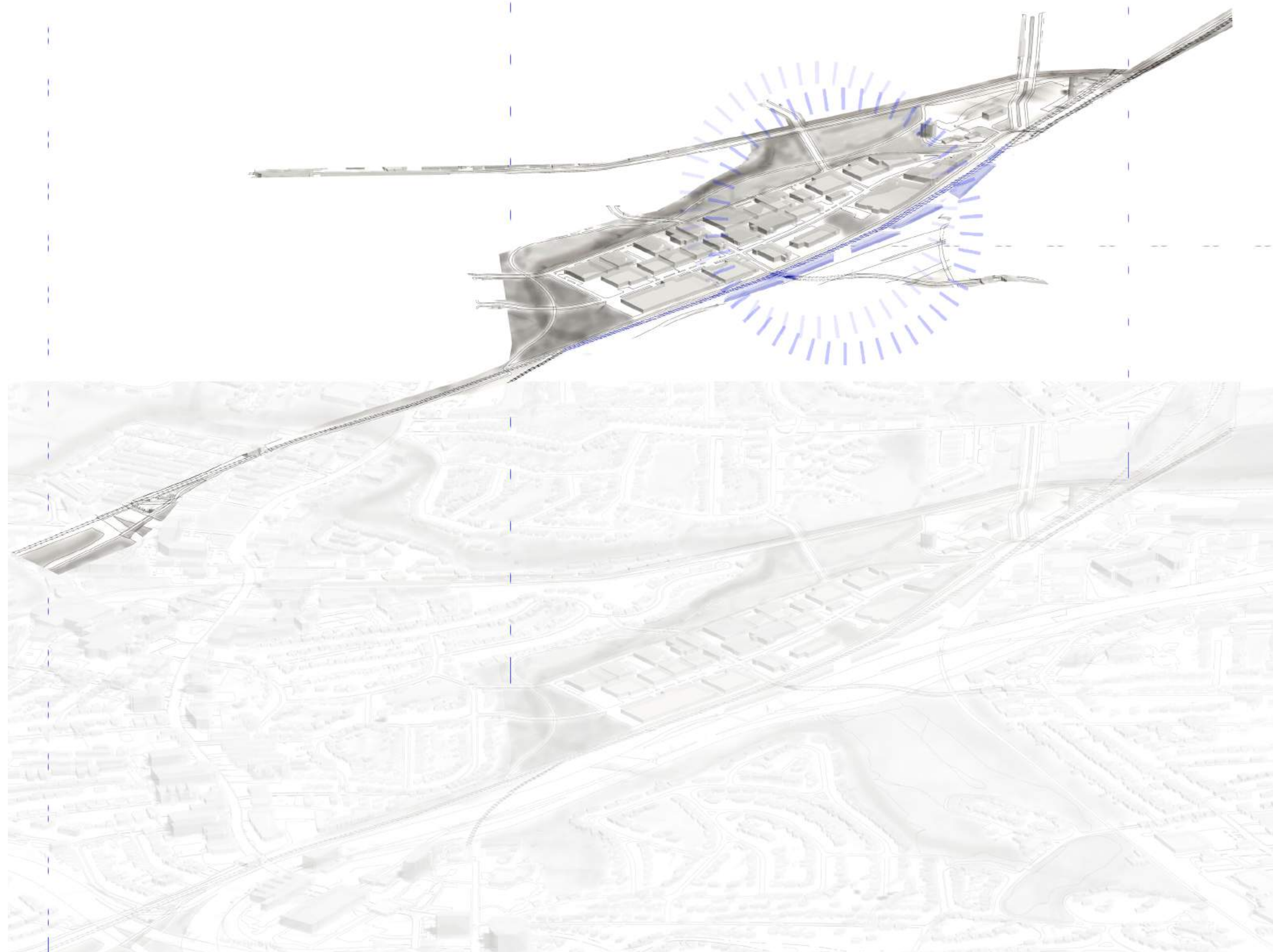


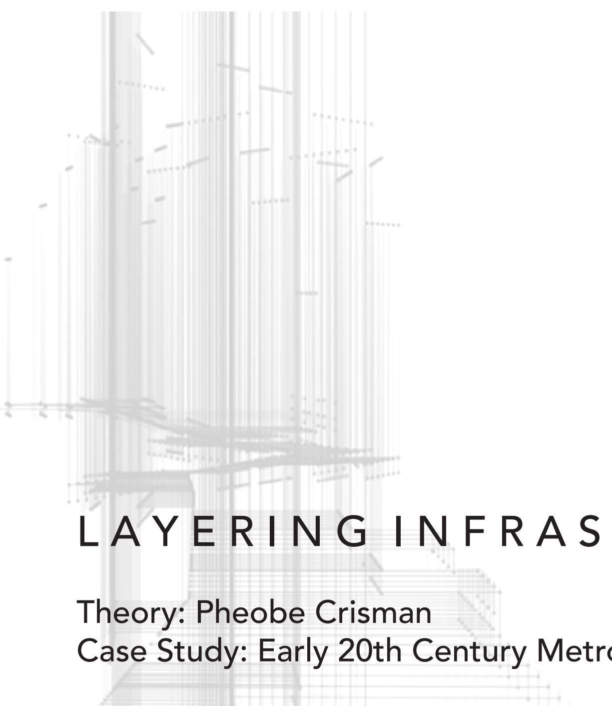
PROPOSED ELEVATIONS
SCALE: 1/32"=1'-0"

6.0

ARCHITECTURAL SOLUTION

6.1 APPLIED URBAN HYBRIDIZATION STRATEGIES





LAYERING INFRASTRUCTURE

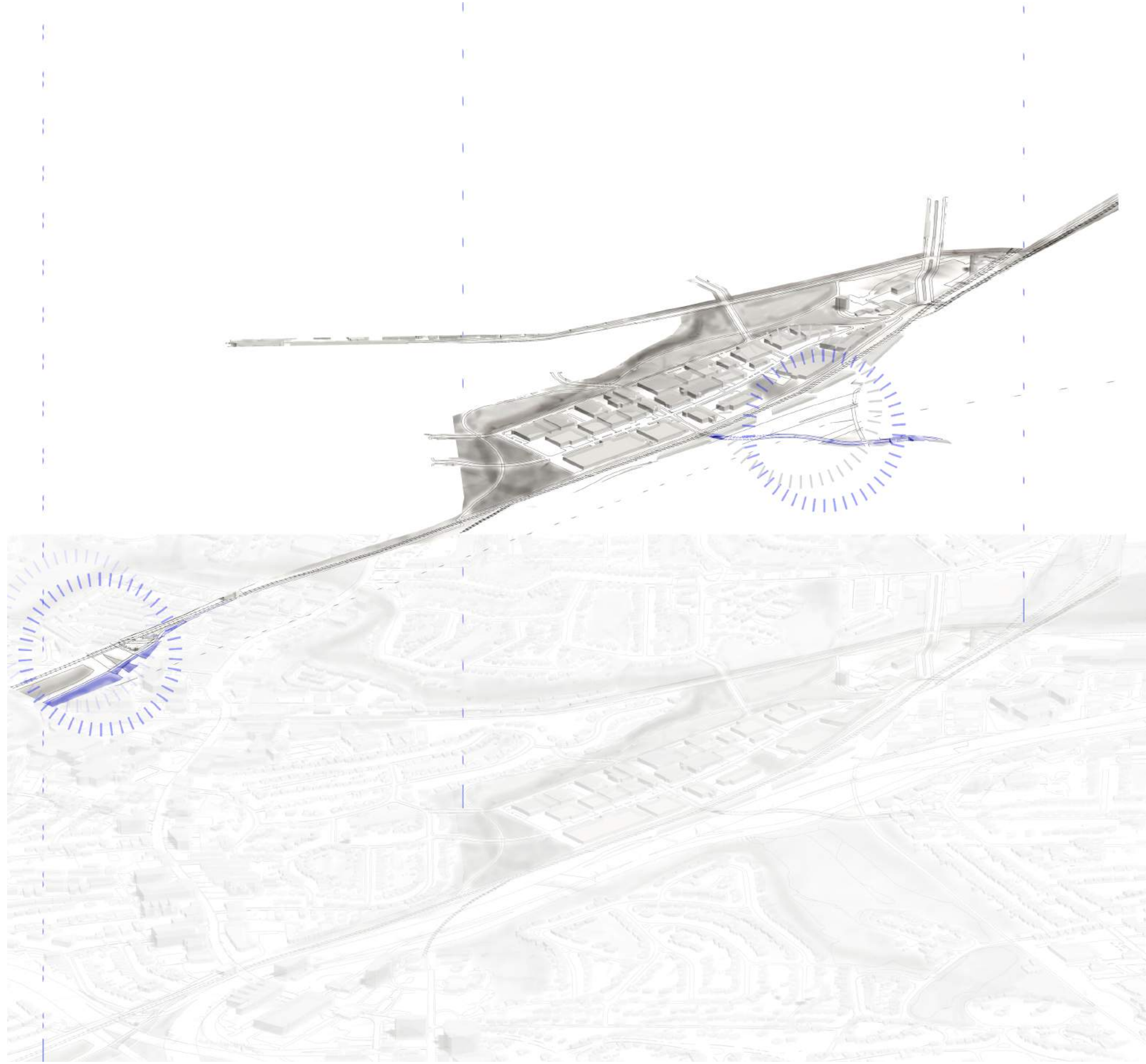
Theory: Pheobe Crisman
Case Study: Early 20th Century Metropolis

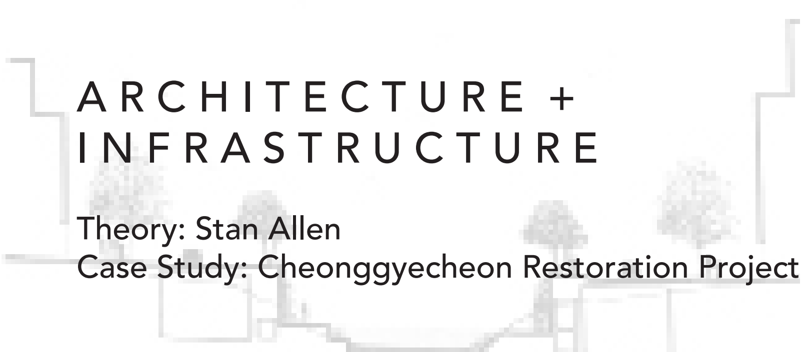
By keeping the MARTA line elevated towards Lindbergh, it is layered on top of the existing CSX and AMTRAK lines, making space for the proposed BeltLine spur trail connecting Armour to Atlantic Station. Once the trail reaches Armour, a third layer intervenes between the rail lines in section, prioritizing continuity of the pedestrian trail. A MARTA platform is introduced on the top layer as well as a park and a retail strip along the corridor. This long "station" makes the corridor a destination; not simply just transit.

RECLAMATION

Theory + Case Study: Ryan Gravel

One of the important principles that this thesis is based upon is that the existing network must be able to evolve to contemporary means of transit. No matter the form of infrastructure, it should still utilize the paths of the existing network. Two unused rail lines become key pieces in the proposed master plan. The unused freight line that bridges over I-75 becomes a pedestrian path, helping to make a one and a half mile connection from Armour to Atlantic Station. Another unused rail line extending from the Piedmont Heights neighborhood is adapted into a complete street. Bridging over the Buford Highway Connector and tunneling under I-85, this new road cuts through the site to connect the neighborhoods surrounding Armour.

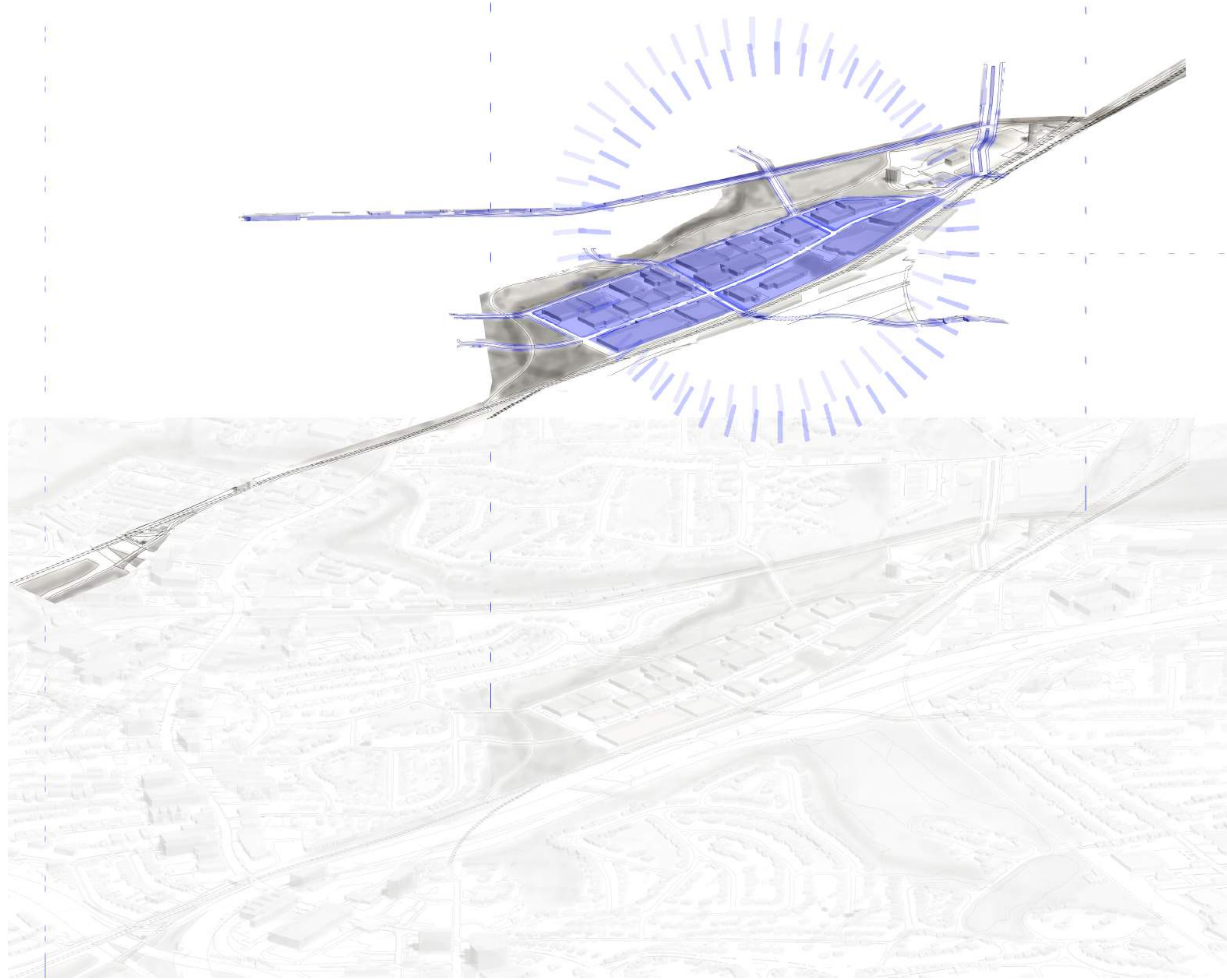




ARCHITECTURE + INFRASTRUCTURE

Theory: Stan Allen
Case Study: Cheonggyecheon Restoration Project

This thesis relates architecture and infrastructure in two ways: the formal hybridization of infrastructural components at their intersection and the resultant framework for urban development created by a properly planned infrastructural network. By creating a grid through a once-localized area created by the Armour Dr - Ottley Dr circle and accepting the new BeltLine Overlay regulations of the site, this provides opportunity for transit-oriented development.



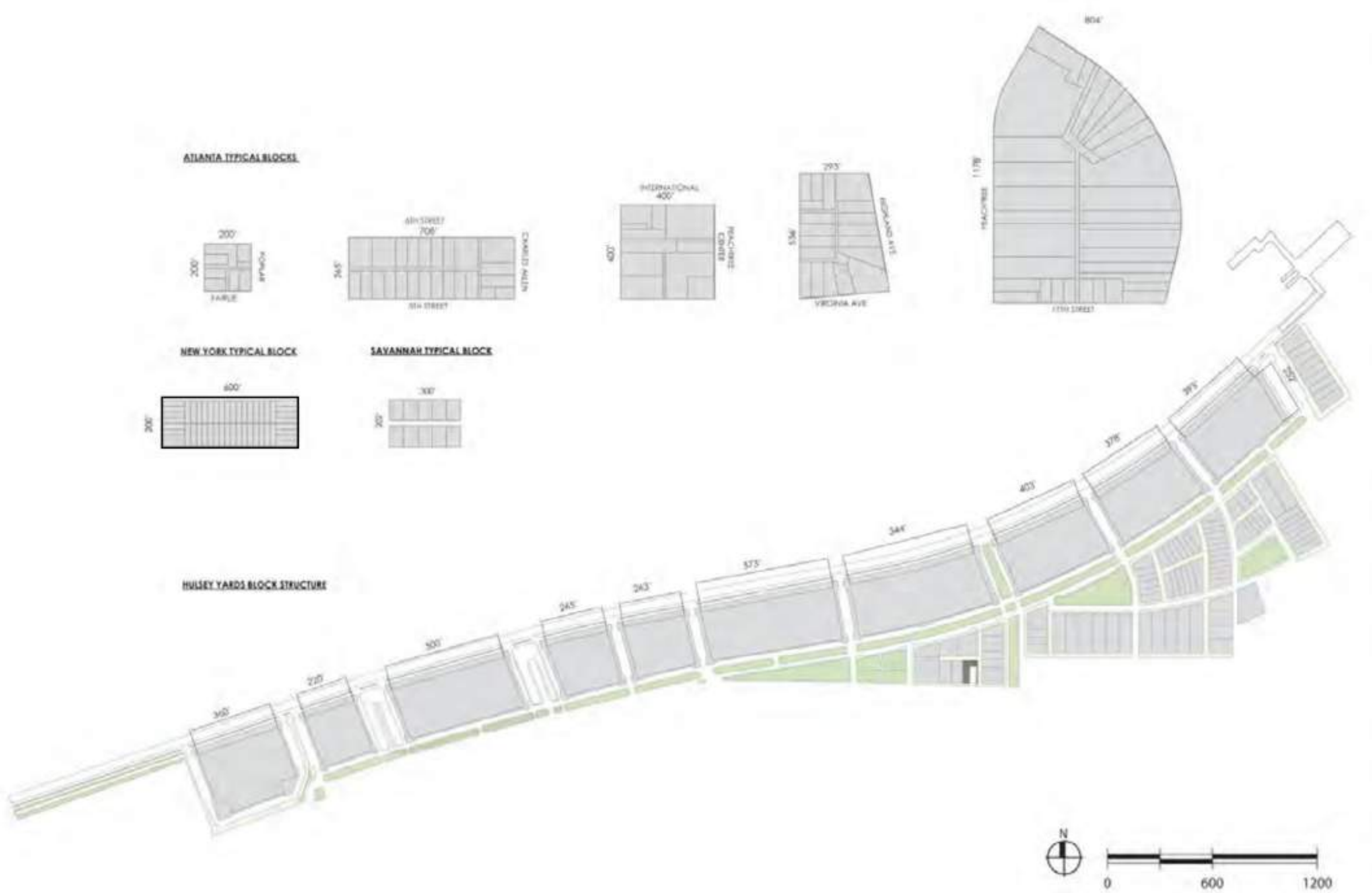


Figure 6.1
Study on Subdivision,
Georgia Institute of Technology

6.2 TRANSIT-ORIENTED DEVELOPMENT

"Urban planning should provide a framework that allows for accomodation of the greatest variety of possible developments[17]." Subdividing land is an accepted method of re-envisioning potential use for industrial areas. Introducing a subdivided street grid for Armour in Chapter 4 was the first step towards urban integration in the master plan for this thesis. By seeking greater infrastructural efficiency, a higher urban density can be achieved[1c]. Now that Armour has been subdivided into useful blocks, it allows variation and layered uses over time.

Shown in Figure 6.1 - Figure 6.3, prior research at Georgia Institute of Technology has studied that this type of block regularization can bring economic and adaptive growth to industrial areas. In this study, average blocks were overlaid onto present-day Hulsey Yards, a CSX railroad rail yard. With these regularized blocks, variable development, such as commercial, residential, mixed-use, etc., can easily be applied to each block. This creates higher density and forecasts a mix of compatible uses in future development[5].

The majority of the Armour site in this thesis is regulated by the BeltLine Overlay, which encourages a grid of smaller blocks for development. The objective for development is supported by the BeltLine Overlay District Regulations, which state that strategically connecting trails, transit, and economic development in Atlanta is a catalyst to enhance the quality of life in the city. Providing the framework for urban design encourages pedestrian access, reduces congestion, and furthers the urban character of the area[16].

Paralleling the intent of the zoning, the proposal for this thesis, by subdividing the site, is to create a continuous corridor for transit by revitalizing existing neighborhoods and preserving the industrial district[16]. The framework that the proposal provides ensures

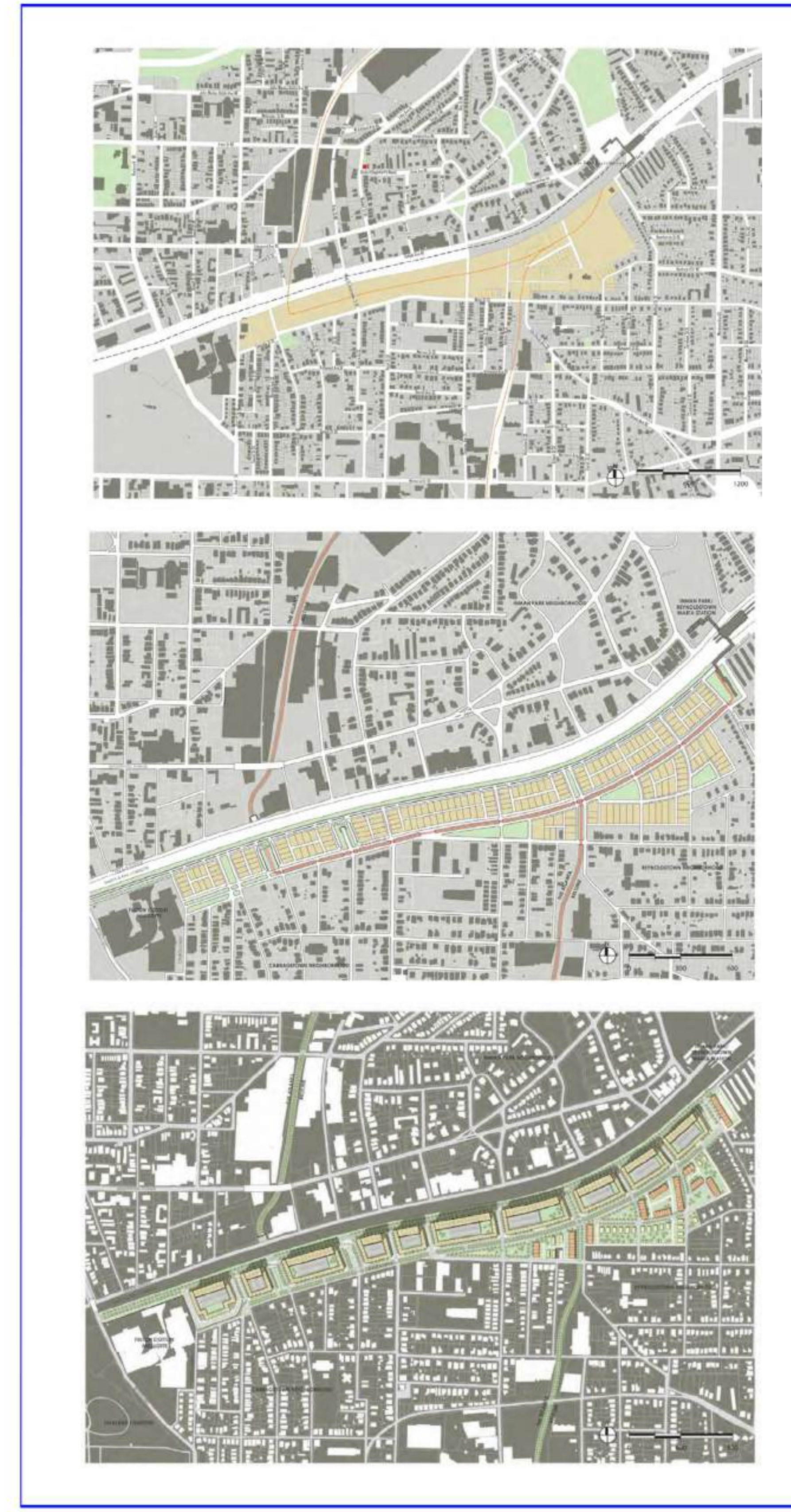


Figure 6.2
Hulsey Yards Redevelopment

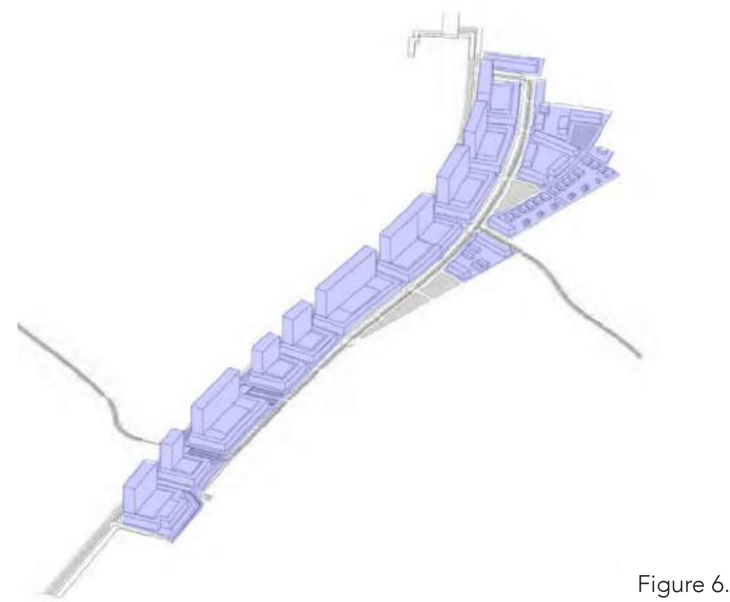


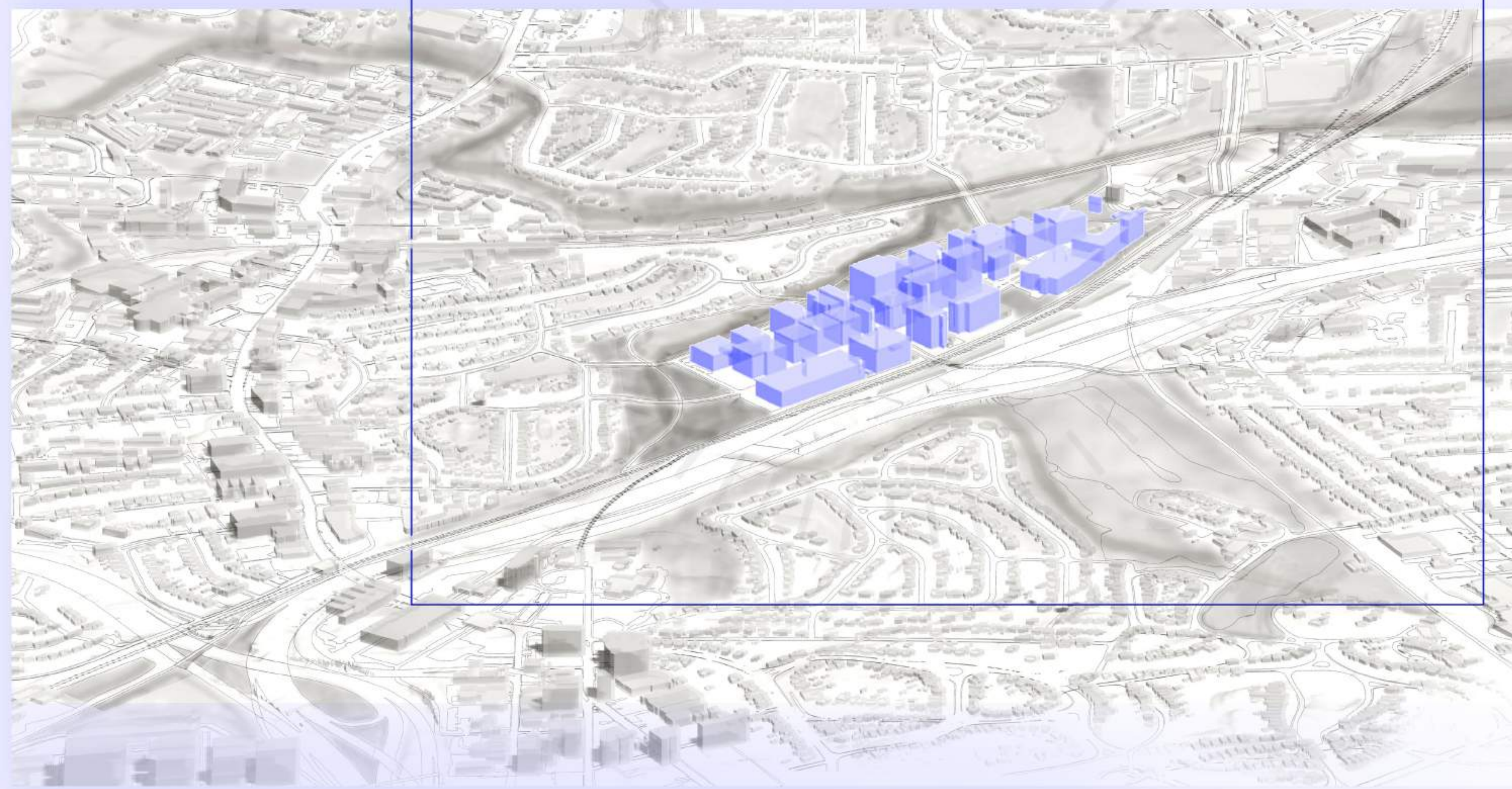
Figure 6.3
TOD Potential Redevelopment for Hulsey Yards,
Georgia Institute of Technology

appropriate urban form for future development while maintaining the industrial uses.

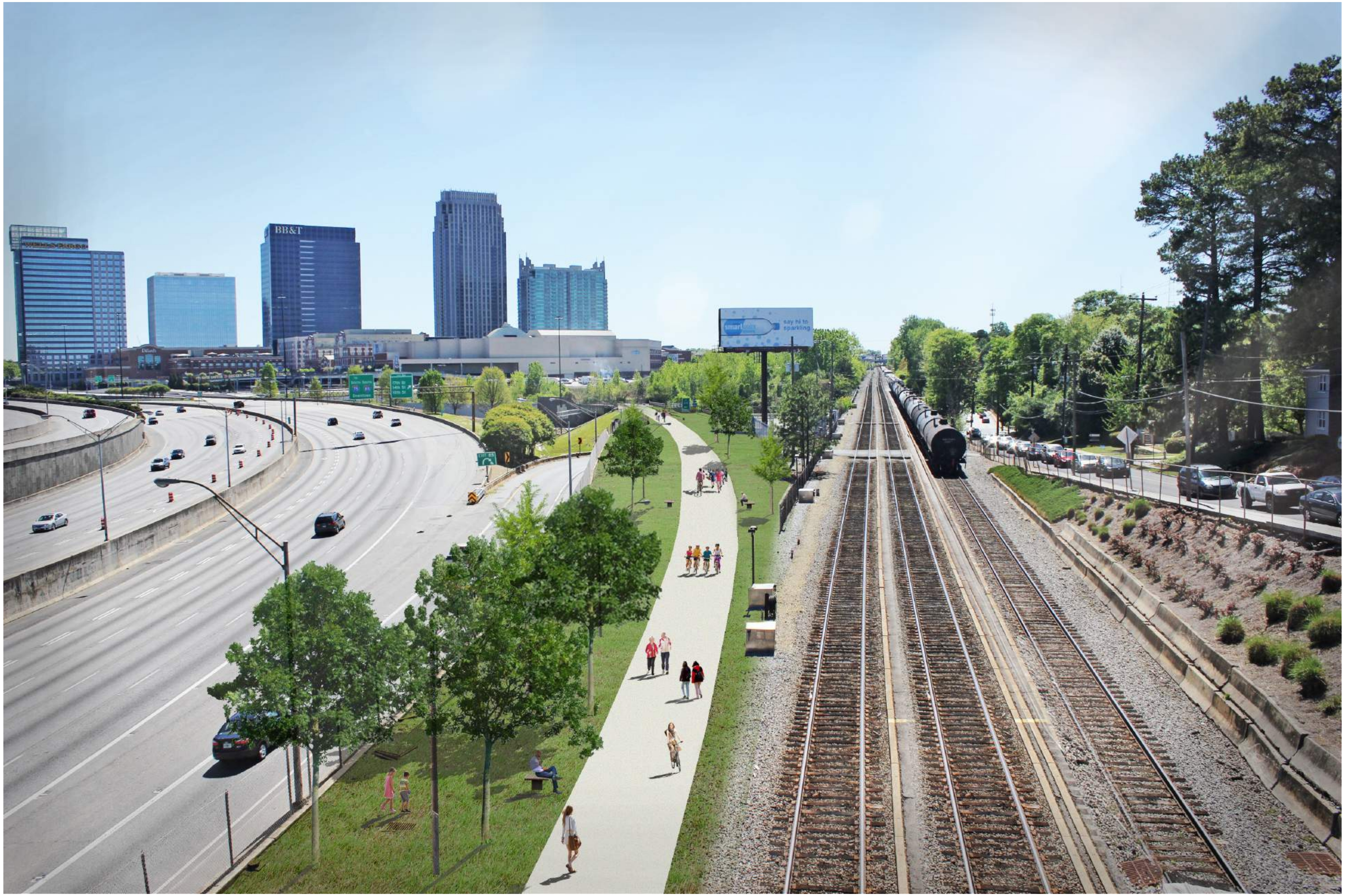
SUBDIVISION + TRANSIT-ORIENTED DEVELOPMENT

The ten multimodal intersections were addressed in Chapter 3.0 in order to support the future transit-oriented development that is created by Armour's resulting connectivity to the urban grid by foot, automobile, and public transport supported by the new, subdivided street grid.

The defined relationship between architecture and infrastructure presents the opportunity for new density and development. Under zoning and hybridized regulatory frameworks, this thesis proposal becomes the framework for TOD redevelopment. The image to the right shows the site with potential density and use under the proposed new plan. The demonstrated outcome maximizes land use as a result of resilient hybridized infrastructure.



Potential Redevelopment of Armour



2 INTERSECTION TWO RENDERING

6 INTERSECTION SIX CONCEPTUAL COLLAGE

7.0

APPENDIX

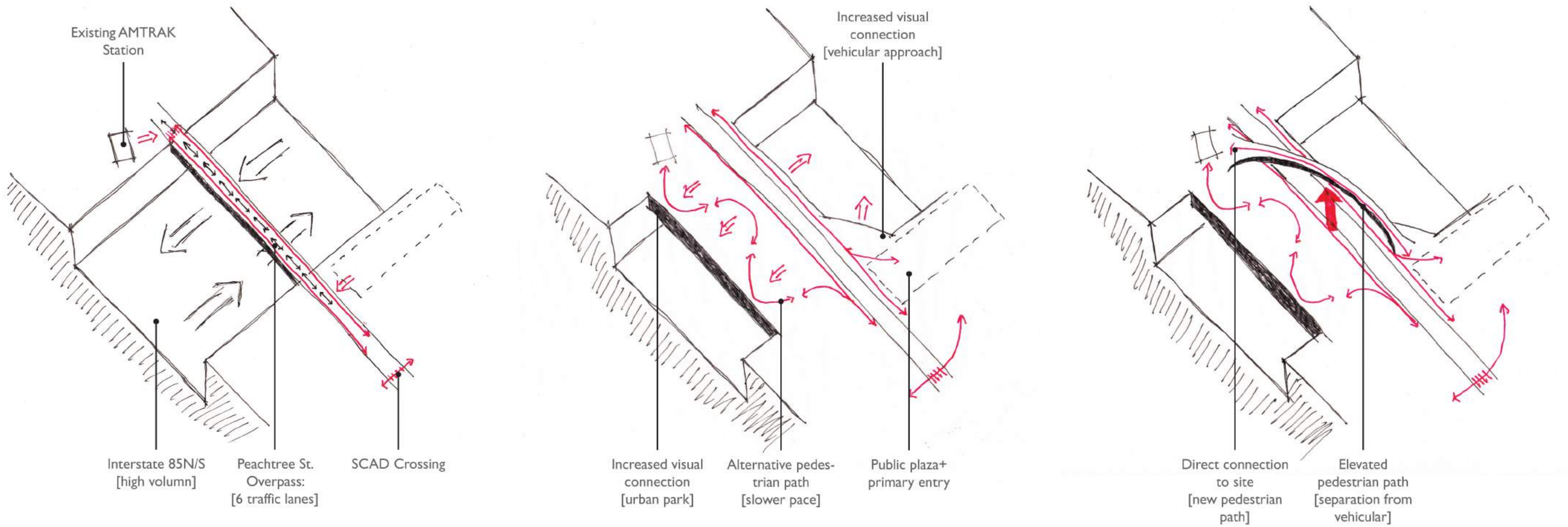
Figure 7.1

7.1 HONORS COMPONENT

STUDIO COLLABORATION

A third year architecture student at Kennesaw State University, taught by Dr. Bill Carpenter, worked with a site adjacent to this thesis's Intersection #3: the AMTRAK station at the intersection of Deering Rd and Peachtree St. The objective of their project was to design a high rise at the opposite end of the Peachtree St bridge while utilizing the bridge to enhance connectivity to their site.

The author conducted a workshop with the students during one studio period to engage them midway through their projects. After sharing the principles and work for this thesis, the students were eager to participate in a workshop to "bridge" the two projects by using the hybridization principles of this thesis.



01
EXISTING PEDESTRIAN CIRCULATION

02
PROGRAMMATIC+VISUAL SHIFTS

03
PEDESTRIAN CIRCULATION SHIFT

Figure 7.2
Group One Conceptual Diagrams

GROUP ONE

Concept focus: Better pedestrian access for Peachtree Street bridge, connection of site to public transport, capturing view of city

Proposal: Expand Peachtree bridge to create a park and buffer against traffic and connect to AMTRAK station + proposed BeltLine spur

Critique through the lens of Urban Hybridization
By expanding the Peachtree St bridge to become a gathering place with more better pedestrian access at the street level, the group used the concept of hybridization to create more than one use on the bridge. In connecting to their midrise, the group adds a secondary bridge for a direct connection to the AMTRAK station. As the program for their building was a film studio for Savannah College of Art and Design, they felt that many people would be traveling from out-of-state to their proposed studio, and this would be a way to accomodate them.

Group One's hybridized proposal for bridge at the street level reflects the principles of this thesis, and the addition of a new pedestrian bridge above the existing Peachtree St bridge is a good example of layering infrastructure. However, the proposed pedestrian bridge is a single-use infrastructure and could be integrated more with the existing bridge to create a better hybridized solution.

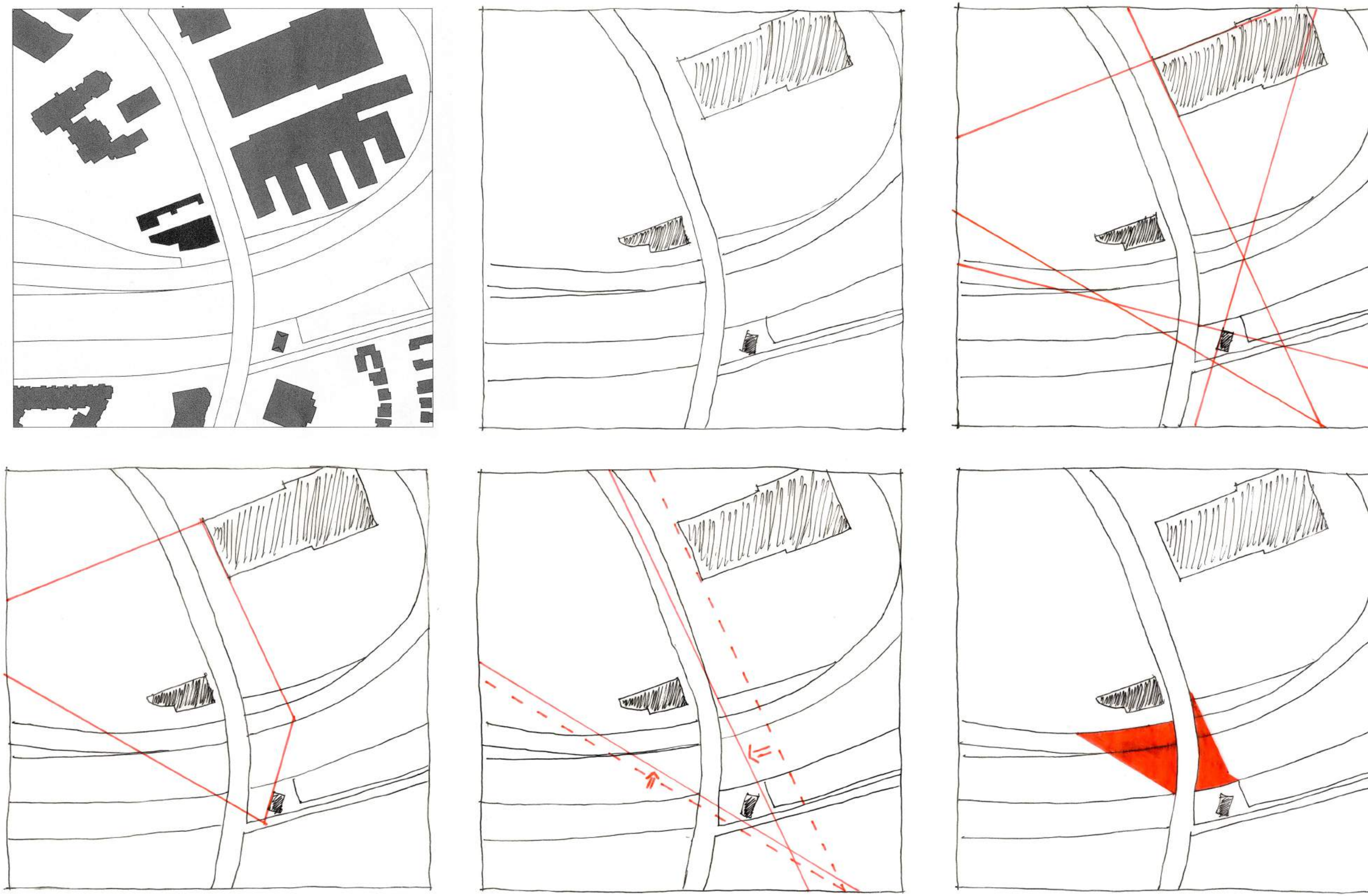


Figure 7.3
Group One Plan Development

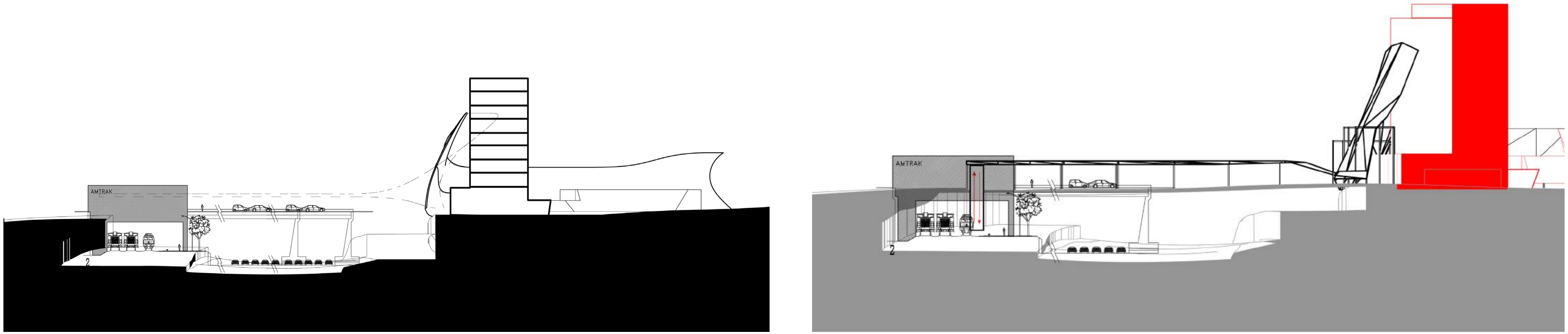


Figure 7.4
Group Two Sectional Study

G R O U P   T W O

Concept focus: Physical connection from project site to retail on Peachtree St, Separation of foot and vehicular traffic

Proposal: Divert foot traffic from Peachtree St to a separate, parallel pedestrian bridge (on north side) structured same as skin of proposed midrise. The bridge includes gallery space in connection to their midrise's program and also vertical circulation on opposite side as pedestrian connection to AMTRAK and proposed BeltLine spur.

Critique through the lens of Urban Hybridization
In contrast to Group One, Group Two chose divert the pedestrian path from Peachtree St to a parallel bridge linking their site to Intersection #3. Proposing that the pedestrian bridge incorporate a gallery program of its own, in support of their proposed film studio, the path would create a different experience than the existing sidewalk on the bridge.

Seamlessly unraveling from the winding scheme of the group's midrise, the extension of the building would connect to the AMTRAK station, and furthermore to this thesis's vertical circulation point to connect to the proposed BeltLine spur trail. In Figure 7.4, the proposed Intersection #3 has been overlaid with the group's proposal.

While the group proposed a separation of infrastructures, the pedestrian bridge follows the same path as the existing street. Conceptually, this group's proposal is more hybridized than Group One's for this reason in that it is taking advantage of the existing network and adapting it to a new, more functional purpose.

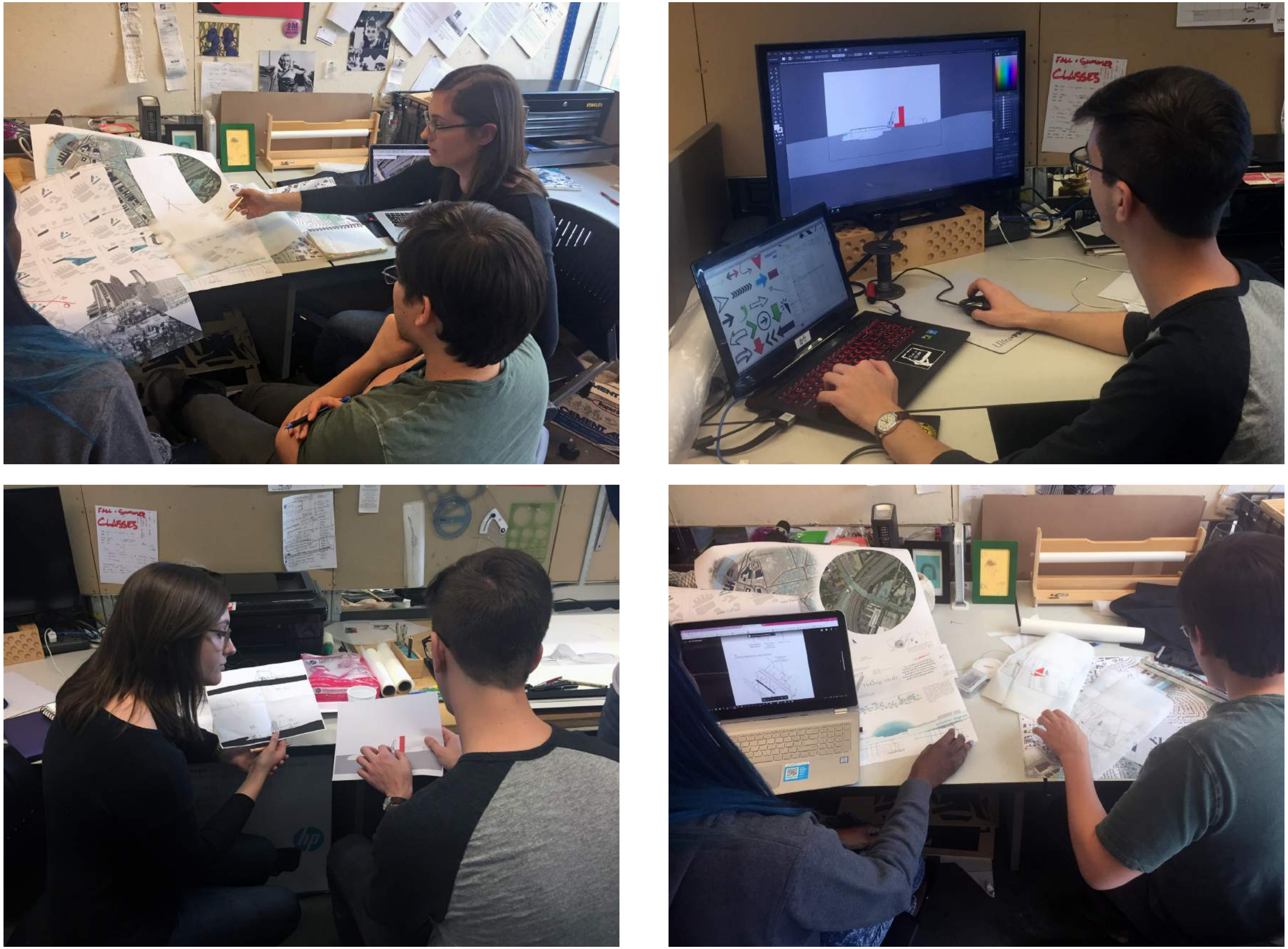
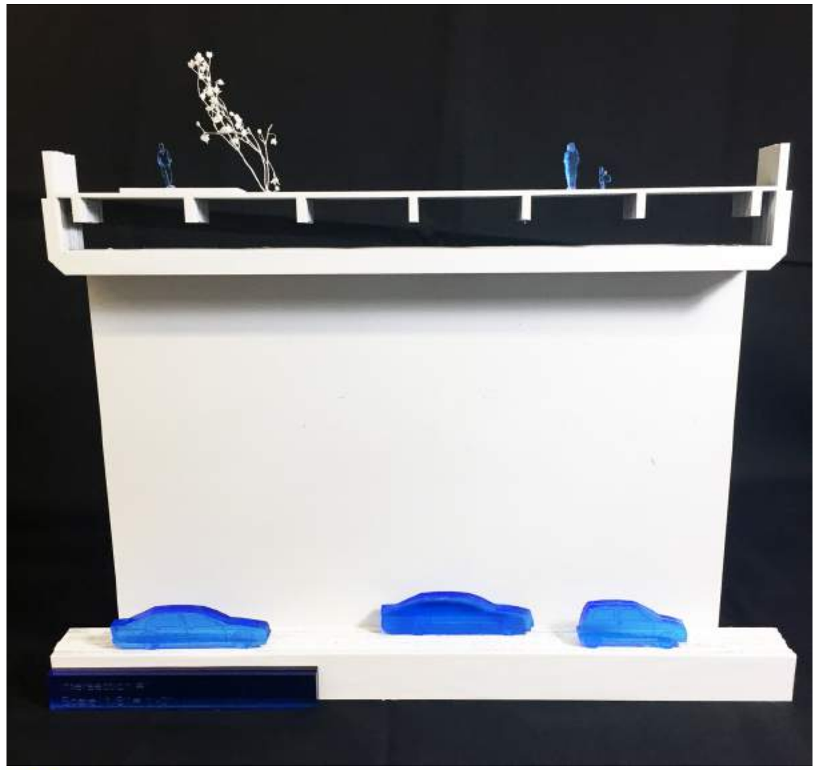


Figure 7.5

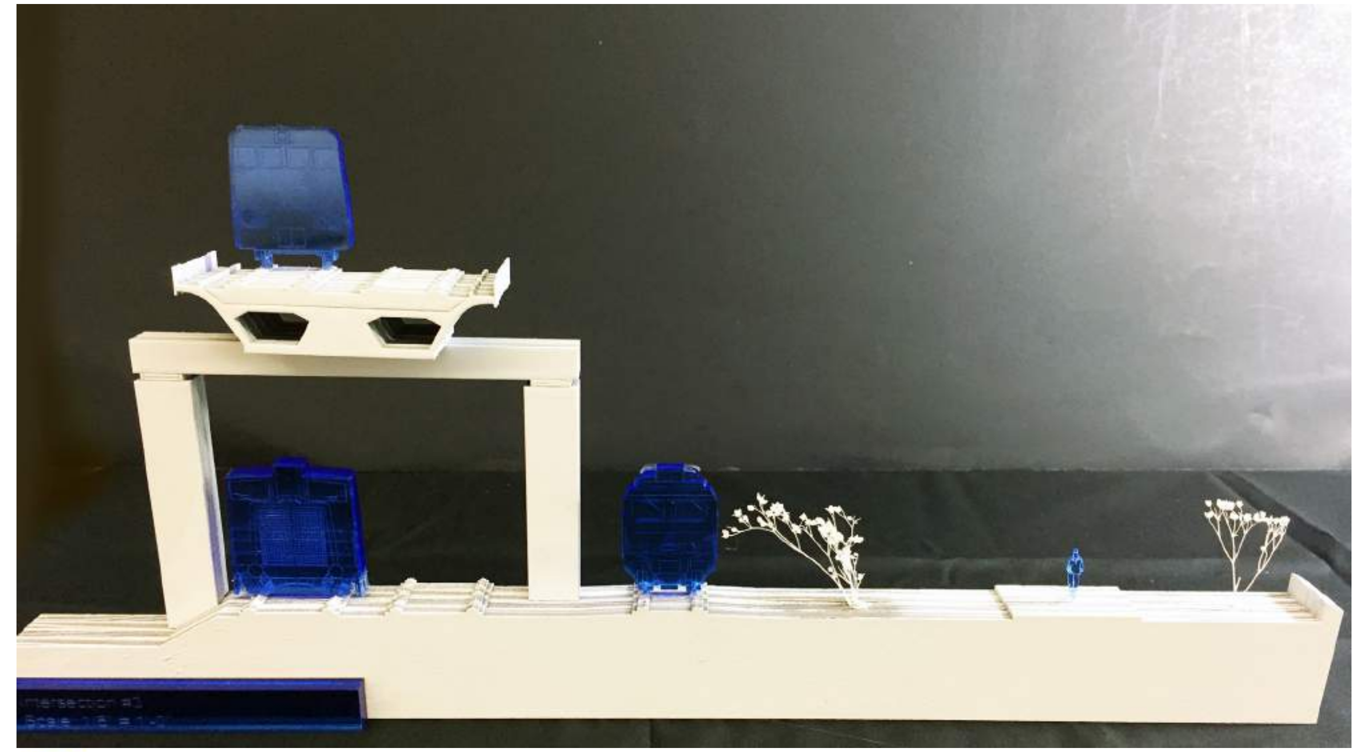
7.2 PRESENTATION

Thesis Competition Presentation
Honorable Mention Award

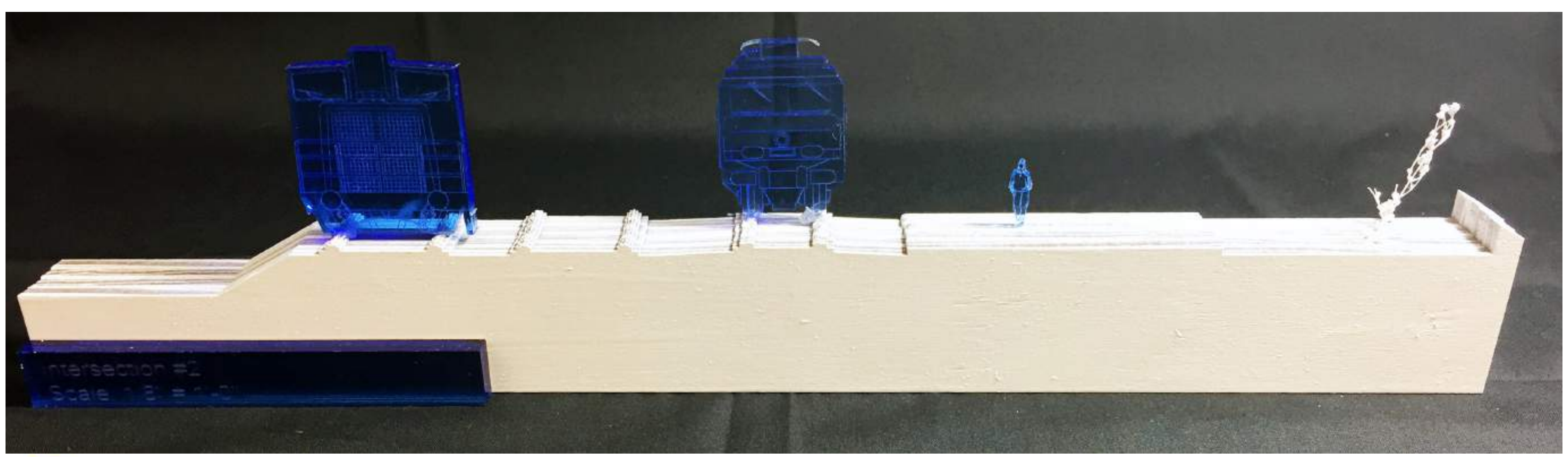
1″ = 300′ Site Model
Foam and Acrylic



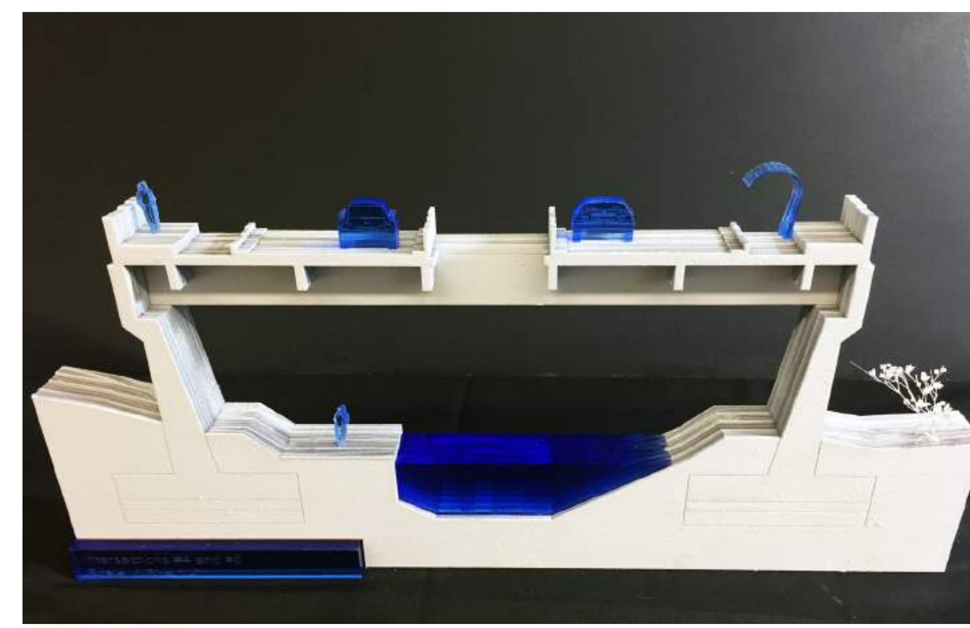
1



3

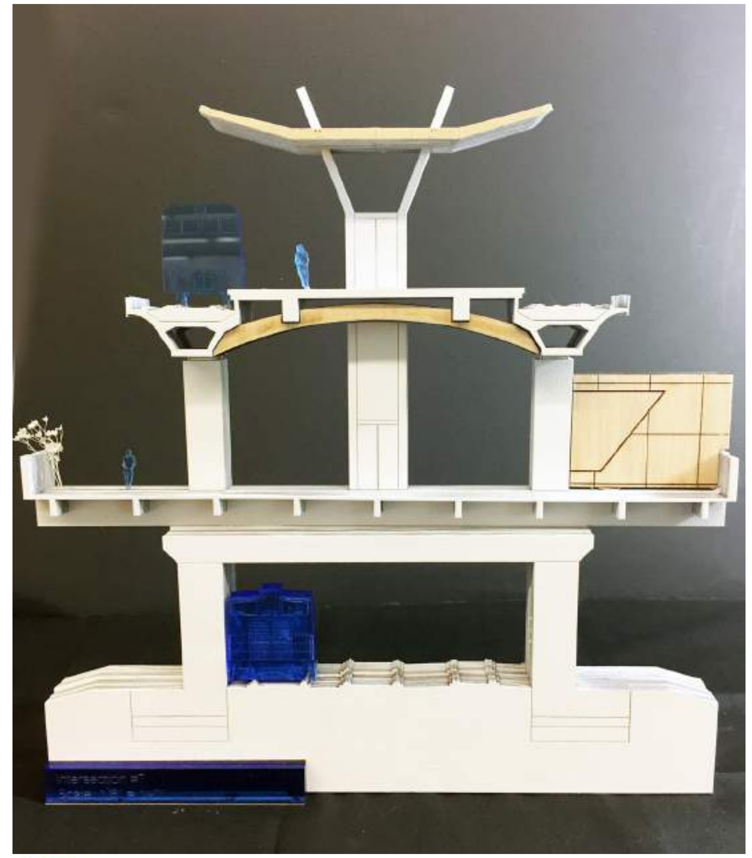


2

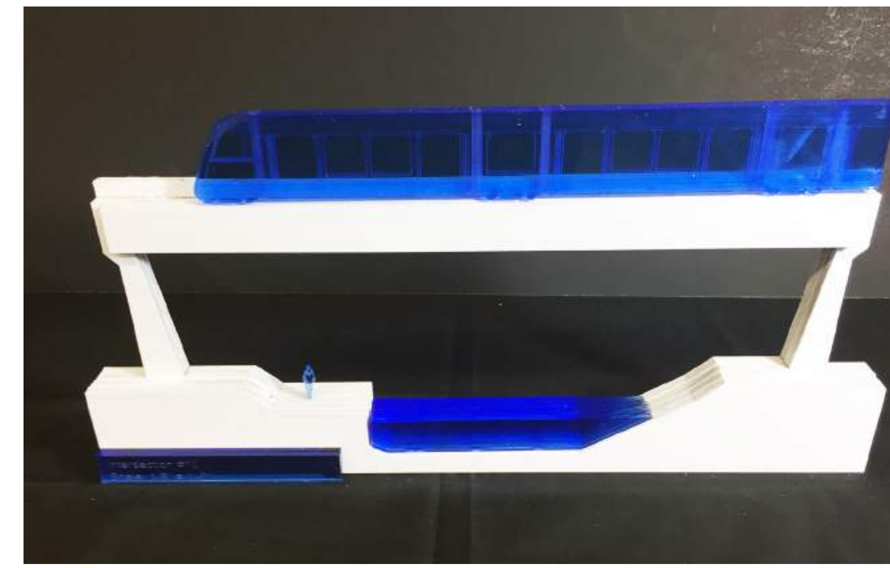


4 5

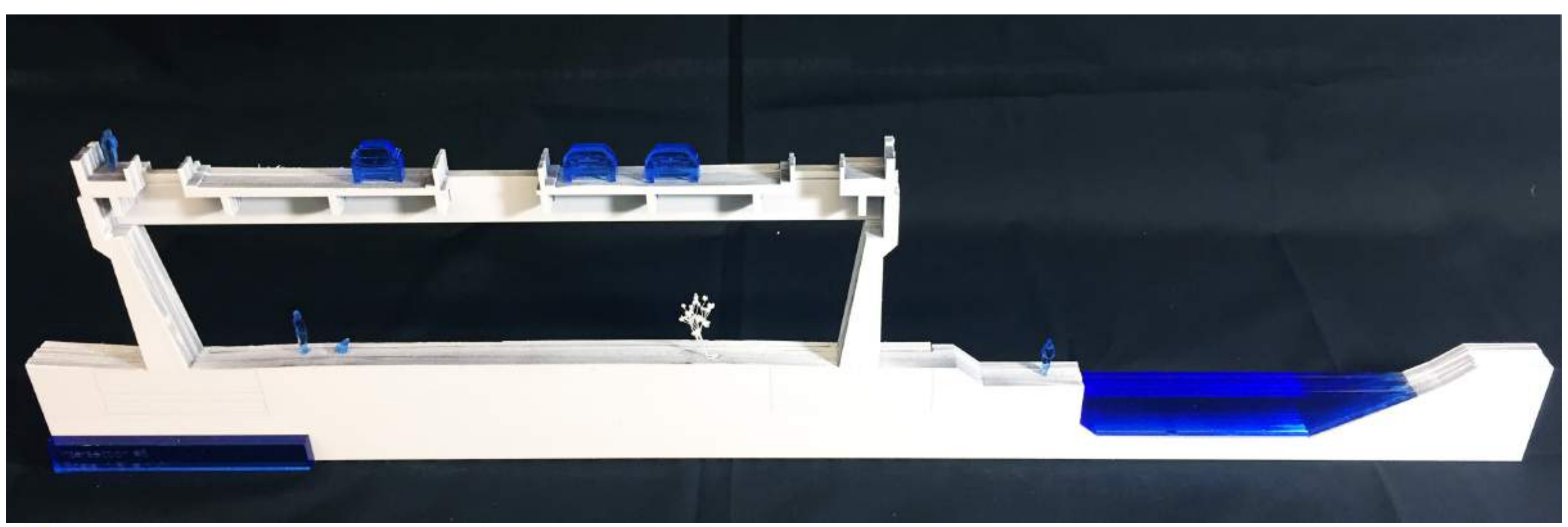
6



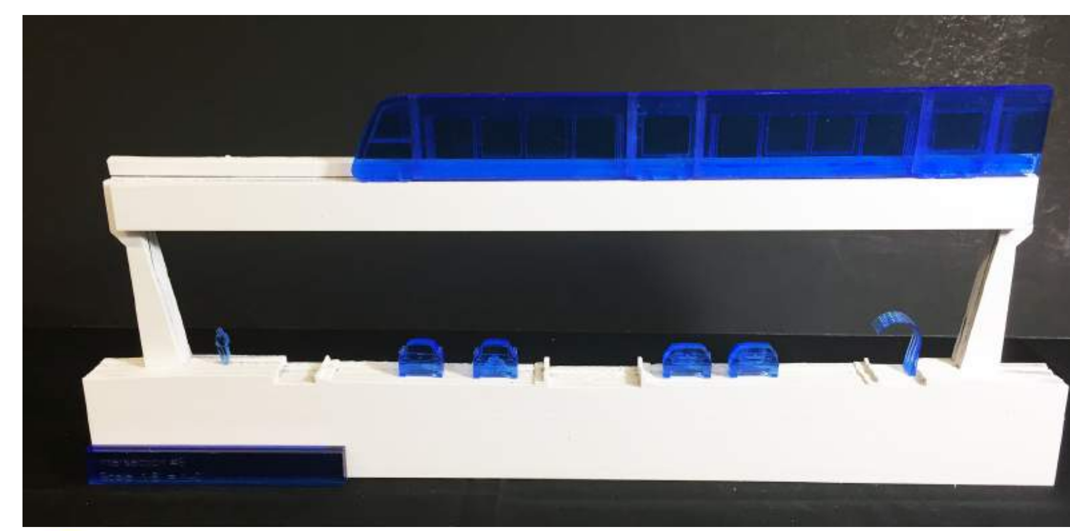
7



10



8



9

REFERENCES

Chapter One: Infrastructure + Urbanity

[1] Gravel, R. (2016). Where we want to live: Reclaiming infrastructure for a new generation of cities. New York: St. Martin's Press.
[2] Crisman, P. (2010, March 06). Inhabiting the In-between: Architecture and infrastructure intertwined. Retrieved from http://www.people.virginia.edu/~pc4v/pdf/004_inhabiting_in_between.pdf
[3] Thompson, Cadie. "Why No One Will Own a Car in 25 Years." Business Insider. June 29, 2015. Accessed April 29, 2016. http://www.businessinsider.com/why-no-one-will-own-a-car-in-25-years-2015-6.
[4] Gaete, C. (2016, December 01). 6 Cities That Have Transformed Their Highways Into Urban Parks. Retrieved December 02, 2016, from http://www.archdaily.com/800155/6-cities-that-have-transformed-their-highways-into-urban-parks
[9] Busquets, J. (2011). Deconstruction/construction: The Cheonggyecheon Restoration Project in Seoul. Cambridge, MA: Harvard University Graduate School of Design.
[10] Building the Western and Atlantic Railroad. (2016). Retrieved November 01, 2016, from http://www.aboutnorthgeorgia.com/ang/Building_the_Western_and_Atlantic_Railroad
[11] Forbes: Atlanta traffic the worst in America. (2008). Retrieved August 21, 2016, from http://www.bizjournals.com/atlanta/stories/2008/04/28/daily97.html
[14] Park over GA 400. (2016, October 20). Retrieved November 12, 2016, from http://www.buckheadcid.com/plans-and-studies/park-over-ga-400/
[15] Atlanta Plans "Smart Corridor". (2016, October 26). Retrieved December 1, 2016, from http://www.bizjournals.com/atlanta/news/2016/10/24/atlanta-plans-smart-corridor-in-midtown-to-help.html?ana=e_ae_set1&s=article_du&ed=2016-10-24&u=asJPPITMgbi9YW7ZDiMoUw025439ae&t=1477336649&j=76230511

Images

Figure 1.1 https://www.instagram.com/p/BK0xG5rD6Vu/
Figure 1.2 https://i.embed.ly/1/display/resize?key=1e6a1a1efdb011df84894040444cdc60&url=http%3A%2F%2Flevittownnow.com%2Fwp-content%2Fuploads%2F2015%2F10%2Fimage_main1.jpg
Figure 1.3 - Figure 1.5 Boyd, Photographs of archived maps from Atlanta History Museum
Figure 1.6 Google Maps, retrieved 2016.11.20
Figure 1.7 Diagram by author
Figure 1.8 Diagram by author

Chapter Two: Hybridization of Infrastructure

[5] Atlanta BeltLine Eastside Trail. (2016). Retrieved February 06, 2016, from https://beltline.org/
[6] Crisman, P. (2010). Interstices: the Architectural Appropriation of Transportation Infrastructure in the City Center. Retrieved from file://ACSA.AM.88.11%20(1).pdf
[7] Haas, T. (2012). Sustainable urbanism and beyond: Rethinking cities for the future. New York: Rizzoli.
[8] Allen, Stan. Infrastructural Urbanism. New York: Princeton Architectural Press, 1999.
[12] Varone, J. (2011, April 13). Robert Moses's Fundamental Misunderstanding. Retrieved October 12, 2016, from http://nyc.streetsblog.org/2007/02/09/crisscrossed-with-freeways-studded-with-parking-lots/
[13] Le Corbusier's "contemporary city" (1925). (2014, June 03). Retrieved September 20, 2016, from https://thecharnelhouse.org/2014/06/03/le-corbusiers-contemporary-city-1925/

Images

Figure 2.1 - Figure 2.2 Diagram by author
Figure 2.3 Busquets, J. (2011). Deconstruction/construction: The Cheonggyecheon Restoration Project in Seoul. Cambridge, MA: Harvard University Graduate School of Design.
Figure 2.4 Diagram by author
Figure 2.5 http://www.crismanpetrus.us/projects/interstices/index.html
Figure 2.6 - Figure 2.8 https://steampunkopera.wordpress.com/tag/retro-futurism/
Figure 2.9 http://beltlineorg.wpengine.netdna-cdn.com/wp-content/gallery/eastside-trail/before-after-over-N-Highland-Ave-looking-south-nextgen.jpg
Figure 2.10 http://specials.myajc.com/living-intown-atlanta-beltline/
Figure 2.11 http://www.smartgrowthamerica.org/smartgrowthusa/wp-content/uploads/2012/05/atlanta-beltway-.png
Figure 1.12 Diagram by author
Figure 2.13 http://predmet.fa.uni-lj.si/siwinds/s2/u4/su4/img/s2_u4_su4_p3_01.gif
Figure 2.14 http://www.suckerpunchdaily.com/2013/04/19/interview-with-peter-zellner/
Figure 2.15 http://assets.inhabitat.com/wp-content/blogs.dir/1/files/2014/11/Cheonggyecheon-River-18.jpg
Figure 2.16 Busquets, J. (2011). Deconstruction/construction: The Cheonggyecheon Restoration Project in Seoul. Cambridge, MA: Harvard University Graduate School of Design.
Figure 2.17 https://thecharnelhouse.org/2014/06/03/le-corbusiers-contemporary-city-1925/
Figure 2.18 http://www.nytimes.com/2007/05/06/nyregion/thecity/06hist.html
Figure 2.19 http://nyc.streetsblog.org/2007/02/09/crisscrossed-with-freeways-studded-with-parking-lots/

Chapter Three: The Interchange - Chapter Six: Architectural Solution

All graphics and images created by author unless noted otherwise.

[16] BeltLine Overlay District. Retrieved March 02, 2017, from http://www.atlantaga.gov/

[17] Green, D. (n.d.). Atlanta Zoning [Scholarly project]. In Georgia Tech Fall 2015 Focused Studio. Retrieved October 12, 2016.

Images

Figure 6.1-Figure 6.3 Green, D. (n.d.). Atlanta Zoning [Scholarly project]. In Georgia Tech Fall 2015 Focused Studio. Retrieved October 12, 2016.

Chapter Seven: Appendix

Images

Figure 7.1 Images by author

Figure 7.2 - Figure 7.3 Dr. Carpenter's 3rd Year Spring 2017 Studio, Group One, Kennesaw State University

Figure 7.4 Dr. Carpenter's 3rd Year Spring 2017 Studio, Group Two, Kennesaw State University

Figure 7.5 Images by author